

Stormwater Management Program (SWMP) Plan

Town of Andover, Massachusetts

June 30, 2019

Prepared For:

Town of Andover
36 Bartlet Street
Andover, MA 01810



Prepared By:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740



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Stormwater Management Program (SWMP) Plan Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name: Andrew P. Flanagan Title: Town Manager
Signature:  Date: 10/9/19

Stormwater Management Program (SWMP) Plan Revision Log

Revision Date	Section Revised	Revisions Made	Revisions Made by

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1 Introduction

Andover is one of many Massachusetts communities regulated under the Environmental Protection Agency's (USEPA) National Pollutant Discharge Elimination System (NPDES) Phase II rule (40 CFR 122). The rule requires regulated operators of municipal separate storm sewer systems (MS4) to develop a Stormwater Management Program (SWMP) and Best Management Practices (BMPs) to reduce the impacts of stormwater discharges. The requirements are outlined in the NPDES General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts, which was signed on April 4, 2016, with an effective date of July 1, 2018, hereinafter referred to as the 2016 MS4 Permit.

This SWMP Plan describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit.

1.1 Regulatory Background

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in USEPA's effort to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II program expands the Phase I program by requiring operators of Small MS4s in urbanized areas, through the use of National Pollutant Discharge Elimination System (NPDES) permits, to implement programs and practices to control polluted stormwater runoff. Phase II is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Under the Phase II rule all MS4s with stormwater discharges from Census designated Urbanized Areas (UAs) are required to seek NPDES permit coverage for those stormwater discharges.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 MS4 Permit) consistent with the Phase II rule. The 2003 MS4 Permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., certain Federal and state agencies and/or facilities) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2016 MS4 Permit.

The 2016 MS4 Permit was signed on April 4, 2016 with an effective date of July 1, 2018. The permit was cosigned by the Massachusetts Department of Environmental Protection (MassDEP) and thus is jointly regulated by EPA and MassDEP.

1.2 MS4 Program Requirements

This permit requires each regulated community to submit a Notice of Intent (NOI) briefly outlining how it will meet the Six Minimum Control Measures (MCMs) and impaired waters requirements of the permit and requesting authorization to discharge under the new permit.

The six MCMs include the following:

1. Public Education and Outreach;
2. Public Involvement and Participation;
3. Illicit Discharge Detection and Elimination Program;
4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

Permittees must also address water quality impacts from waterbodies with approved Total Maximum Daily Loads (TMDLs) and certain impairments, generally known as water quality limited waterbodies.

As required by the 2016 MS4 Permit, The Town of Andover submitted a NOI and required accompanying information, including endangered species, historic preservation, and an outfall map to EPA Region 1 by the September 29, 2018 deadline (**Appendix A**) requesting authorization to discharge under the new permit. Andover received official authorization to discharge stormwater from its MS4 on June 4, 2019 as per the letter from USEPA provided in **Appendix A**. Authorization to discharge expires on June 30, 2022.

This Stormwater Management Program (SWMP) Plan has been developed by the Town of Andover to detail the activities and measures outlined in the NOI to address the requirements of the 2016 MS4 Permit. This SWMP Plan documents BMPs, plans, activities, and measures that have been implemented to date, those that are ongoing, and those proposed for the future to comply with the 2016 MA MS4 Permit. This is a “living” document and will be updated and/or modified as required during the permit term as the Town’s activities are modified, changed or updated to meet permit conditions. The plan has been organized to allow these updates to primarily occur within the appendices.

1.3 Regulated Area

Requirements of the 2016 MS4 Permit are limited to a regulated area, defined as the Town’s Urbanized Area (UA) which generally constitute the largest and most dense areas of settlement in a region. The Bureau of the Census determines UAs by applying a detailed set of published UA criteria to the latest decennial census data. Although the full UA definition is complex, the Bureau of the Census’ general definition of a UA, based on population and population density, is provided below:

“An urbanized area (UA) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas.”

The MS4 permit regulates UA areas based on both the 2000 and 2010 Census (**Appendix A**). Thus, areas that are identified as non-urbanized under the 2010 Census but urbanized under the

2000 Census are still regulated areas. In short, the regulated UA cannot shrink and can only expand. The UA is subject to change every ten years based on the application of the Census definition, thus a larger area may be covered in the future

1.4 How to Use this Plan

For the purposes of the 2016 MS4 Permit and ease of use, the Town's SWMP encompasses three separate written documents:

1. SWMP Plan (this document);
2. Illicit Discharge Detection and Elimination (IDDE) Plan; and
3. Operation and Maintenance (O&M) Plan.

Both the IDDE Plan and O&M Plan are prepared as separate standalone documents to this SWMP Plan. This SWMP Plan is divided into several sections and includes the following components:

- Section 2 Town Characteristics** – Section 2 provides an overview of relevant characteristics, focusing on those aspects related to stormwater runoff and the water quality of surface waters.
- Section 3 MCM 1: Public Education and Outreach** – regulated operators of MS4s are required to implement a public education program. Section 3 discusses activities to comply with this measure.
- Section 4 MCM 2: Public Participation and Involvement** – regulated MS4s are required to obtain public participation throughout the stormwater management program. Section 4 discusses activities to comply with this measure.
- Section 5 MCM 3: Illicit Discharge, Detection, and Elimination** – regulated MS4s must develop and implement an illicit discharge detection and elimination program and develop a regulation to prohibit illicit discharges to the storm drain system. Section 5 discusses activities to comply with this measure. A separate standalone IDDE Plan has also been prepared.
- Section 6 MCM 4: Construction Site Stormwater Runoff Control** – regulated MS4s are required to implement and enforce a program to reduce pollutants in stormwater runoff from construction activities that disturb one or more acres. This requires the development of a local regulation requiring implementation of proper erosion and sediment controls. Permittees are also responsible for inspections and enforcement. Section 6 discusses activities to comply with this measure.
- Section 7 MCM 5: Stormwater Management in New Development and Redevelopment** – regulated MS4s are required to develop and enforce a regulation requiring implementation of post-construction runoff controls at sites where construction activities disturb one or more acres. The controls

must be designed to treat stormwater runoff from post-development sites and must be maintained over the long-term. Section 7 discusses activities to comply with this measure.

Section 8 **MCM 6: Good Housekeeping and Pollution Prevention** – regulated MS4s must review their infrastructure operations and those at specific facilities and make improvements where needed to minimize pollution to stormwater runoff. Operations and maintenance procedures must be documented in writing. Section 8 discusses activities to comply with this measure.

Section 9 **TMDL and Impaired Waters Controls** – regulated MS4s are required to evaluate and address stormwater contributions to impaired waters. Section 9 discusses activities to comply with this measure.

Section 10 **Annual Reporting** – Section 10 provides a summary of annual reporting requirements in order to meet the 2016 MS4 Permit.

Section 11 **Implementation of Best Management Practices** – Section 11 provides a summary of proposed BMPs outlined in Sections 3 through 9 in a concise format for easy reference.

1.5 Program Responsibilities

This plan is intended to be used by Town of Andover staff whose job involves administering the MS4 permit and associated requirements. The Town’s MS4 program will be headed by the following personnel (**Table 1-1**):

Table 1-1. MS4 Responsible Personnel

Name	Title, Department	Contact
Mr. Art Martineau	Acting Town Engineer Engineering Division, DPW	(978) 623-8772 amartineau@andoverma.gov

The Town of Andover has 14 departments responsible for implementing portions of its MS4 program as identified in the NOI. **Table 1-2** provides a list of responsible departments and their general responsibilities within the MS4 program. The responsible person is the most senior person within each department listed below. The names of the responsible personnel are not provided so as to avoid the plan frequently becoming out of date due to changes in personnel and positions.

Table 1-2. Program Responsibilities

Department / Division	General Responsibilities
Board of Health	Information distribution for public education, IDDE program creation and implementation; ordinance and regulation development; illegal dumping program; TMDL requirements; water quality limited waterbody requirements
Board of Selectmen	Ordinance and regulation development
Conservation Commission	Public participation; site plan review procedures; site inspections and procedures; ordinance and regulation development; site inspections and procedures; as-built submittal
DPW, Engineering	Information distribution for public education, public participation; system mapping; illegal dumping program; site plan review procedures; site inspections and procedures; ordinance and regulation development; public complaint hotline; as-built submittal; target properties to reduce impervious area; develop operation and maintenance procedures; SWPPP development and implementation; TMDL requirements; water quality limited waterbody requirements
DPW, Highway	Employee training, develop operation and maintenance procedures; catch basin cleaning; street sweeping; road salt optimization program; BMP inspections and maintenance; vehicle washing program
DPW, Water and Sewer	Information distribution for public education, Sanitary Sewer Overflow (SSO) inventory
Fire Department	Vehicle washing program
Information Technology	Public participation
Pesticide Reduction Task Force	Public participation
Planning Board	Ordinance and regulation development; site plan review procedures; site inspections and procedures; public complaint hotline; as-built submittal; target properties to reduce impervious area
Plant and Facilities	Target properties to reduce impervious area; develop operation and maintenance procedures; inventory buildings and facilities; SWPPP development and implementation; water quality limited waterbody requirements
Police Department	Vehicle washing program
Schools	Information distribution for public education
Water Department	Public participation; IDDE program creation and implementation

2 Town Characteristics

This section provides some background information useful in understanding the Town of Andover's characteristics and resources to develop a tailored Stormwater Management Plan.

2.1 Community Information

Andover is located in eastern Massachusetts within Essex County, approximately 24 miles north of Boston. It is bordered by Methuen and Lawrence, Massachusetts to the north; North Andover, Massachusetts to the east; North Reading and Wilmington, Massachusetts to the south; Tewksbury, Massachusetts to the West; and Dracut, Massachusetts to the northwest. The major interstates of I-495 and I-93 run through the community. Andover is located within the Merrimack River watershed. Select relevant community profile information is provided below:

- Total Area = 32.1 square miles (*source: Wikipedia*)
- 2010 Population = 33,203 (*source: EPA maps based on 2010 US Census*)

2.2 Land Use

Based on the land uses within the Town, as shown in **Figure 2-1**, the Town is developed with a mix of residential, commercial and industrial uses, with a significant portion of forested and wetland lands. The education program will target each of these audiences, as well as developers. Impervious areas are shown on **Figure 2-2**.

2.3 303(d) Impaired Waterbodies

The ultimate goal of this Stormwater Management Plan is to outline a program to effectively maintain the Town's stormwater infrastructure and to improve the water quality of receiving waters (waters which receive stormwater discharges from the MS4) in compliance with the 2016 MS4 Permit. 303(d) impaired waters are those surface waters identified by the MassDEP as priority waters that do not meet water quality criteria. As part of the 2016 MS4 Permit, communities must implement BMPs to address waters with an approved TMDL as of the issuance date of the permit (April 4, 2016) and to address water quality limited waters, including but not limited to waters listed in categories 5 or 4a on the Massachusetts Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b). **Table 2-1** lists the "impaired waters" for which Andover must meet MS4 permit requirements based on the Final 2014 Massachusetts Integrated List of Waters produced by MassDEP every two years¹. These waterbodies are shown on **Figure 2-3**. Andover will review changes as new lists are published and record these changes and any new permit requirements in **Appendix B**.

¹Note that at the time of preparation of this report (May 2019), the 2014 303d list is the most up to date finalized 303d List as approved by USEPA on February 23, 2016.

Table 2-1. Impaired Waters

Waterbody Name	Segment ID and Category¹	Impairment(s)²	Approved TMDL³
Field Pond	MA92019	4c (Non-Native Aquatic Plants*)	
Gravel Pit Pond	MA83007	4c (Non-Native Aquatic Plants*)	
Ballardvale Impoundment	MA83011	5 (Non-Native Aquatic Plants*)	
		Aquatic Plants (Macrophytes)	
		Mercury in Fish Tissue	
Brackett Pond	MA92004	5 Turbidity	
Collins Pond	MA92010	5 Excess Algal Growth	
		Turbidity	
Fish Brook	MA84A-40	5 Chloride	
		E. coli	
Fosters Pond	MA83005	5 (Non-Native Aquatic Plants*)	
		Mercury in Fish Tissue	
		Oxygen, Dissolved	
Frye Pond	MA92023	5 Excess Algal Growth	
Haggetts Pond	MA84022	5 Mercury in Fish Tissue	
Hussey Pond	MA83009	5 Excess Algal Growth	
Merrimack River	MA84A-03 and -04	5 Escherichia coli	
		Mercury in Fish Tissue	
		PCB in Fish Tissue	
		Phosphorus (Total)	
Pomps Pond	MA83014	5 (Non-Native Aquatic Plants*)	
		Mercury in Fish Tissue	
Rabbit Pond	MA83015	5 Turbidity	
Rogers Brook	MA83-04	5 Physical substrate habitat alterations*)	
		Fecal Coliform	2587
		Turbidity	
Salem Pond	MA92057	5 Turbidity	
Shawsheen River	MA83-18	5 Fecal Coliform	2587
		Mercury in Fish Tissue	
		Oxygen, Dissolved	
Shawsheen River	MA83-19	5 Fecal Coliform	2587
		Oxygen, Dissolved	
Unnamed Trib to Shawsheen River starts near Dascomb Rd	MA83-20	5 Chloride	
Unnamed Trib. to Meadow Brook, known as "Pinnacle Brook"	MA83-15	5 Chloride	
		Fecal Coliform	2587

1. Category 4c Waters – impairment not caused by a pollutant, TMDL not required.

Category 5 Waters – impaired waters that require a TMDL.

2. Waterbodies with impairments subject to specific BMP requirements under the 2016 MS4 Permit are highlighted.

3. EPA TMDL # from the 303(d) list. TMDL 2587 is the “Final TMDLs of Bacteria for Shawsheen River Basin”.

*TMDL not required (Non-pollutant)

Per the table above, Andover is subject to the TMDL requirements of the 2016 MS4 Permit for fecal coliform for three waterbodies under the “Final TMDLs of Bacteria for Shawsheen River Basin”. Additionally, Andover is subject to the water quality limited waterbody requirements of the 2016 MS4 Permit for phosphorus (Merrimack River), E. coli (Fish Brook and Merrimack River), chloride (Fish Brook and two unnamed tributaries), and turbidity (Brackett Pond, Collins Pond, Rabbit Pond, Rogers Brook, and Salem Pond). TMDL and water quality limited waterbody requirements are outlined further in **Section 9**. With the exception of monitoring during IDDE investigations, the remaining parameters are not directly covered or addressed by the 2016 MS4 Permit.

2.4 Endangered Species Act Determination

To be eligible to discharge stormwater under the 2016 MS4 Permit, the Town of Andover must certify that its stormwater system is not impacting federally listed rare or endangered species habitat or other critical environmental locations. This was completed in the summer of 2018 as meeting “Criterion C” on the NOI with the results also documented in the NOI (**Appendix A**). The Northern Long-eared Bat (*Myotis septentrionalis*) was the only species identified as potentially being present within Andover’s regulated area. No critical habitats were identified.

2.5 National Historic Preservation Act Determination

Regulated MS4s must also evaluate whether its discharges have the potential to affect historic properties. If there have been no relevant changes in existing discharges since the 2003 MS4 General Permit, the discharge can still be considered to have no potential to have an effect on historic properties. This has been documented as “Criterion A” on the Notice of Intent (**Appendix A**) and thus no additional information is required for documentation.

Where there is disturbance of land through the construction and/or installation of control measures, there is a possibility that artifacts, records, or remains associated with historic properties could be impacted. In these cases, such as during future construction of structural stormwater BMPs, the Town will ensure that historic properties will not be impacted by their activities, or that they are in compliance with a written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other tribal representative that outlines all measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties. This will be completed as required.

3 MCM 1: Public Education and Outreach

3.1 Summary of Permit Requirements

3.1.1 Core Permit Requirements

Under MCM 1, permittees must develop an educational program, define educational goals, express specific messages, define the targeted audience for each message, and identify responsible parties for program implementation. At a minimum, the program must provide information concerning the impact of stormwater discharges on water bodies within the community, especially those waters that are impaired or identified as priority waters. The program must identify steps and/or activities that the public can take to reduce the pollutants in stormwater runoff and their impacts to the environment.

Permittees must address four core target audiences, unless one of these audiences is not present in the MS4 community. The targeted audiences and educational topics requiring consideration under the permit are outlined below:

1. Residents
 - Effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers) on water quality;
 - Benefits of appropriate on-site infiltration of stormwater;
 - Effects of automotive work and car washing on water quality;
 - Proper disposal of swimming pool water;
 - Proper management of pet waste; and
 - Maintenance of septic systems.
2. Businesses, Institutions, and Commercial Facilities
 - Proper lawn maintenance (use of pesticides, herbicides and fertilizer);
 - Benefits of appropriate on-site infiltration of stormwater;
 - Building maintenance and storage of materials;
 - Proper use and storage of salt or other de-icing and anti-icing materials;
 - Proper management of waste materials and dumpsters;
 - Proper management of parking lot surfaces;
 - Proper car care activities; and
 - Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.
3. Developers and Construction
 - Proper sediment and erosion control management practices;
 - Information about Low Impact Development (LID) principles and technologies; and
 - Information about EPA's construction general permit (CGP).

4. Industrial facilities

- Equipment inspection and maintenance;
- Proper storage of industrial materials (emphasizing pollution prevention);
- Proper management of dumpsters;
- Minimization of use of salt or other de-icing/anti-icing materials;
- Proper storage of salt or other de-icing/anti-icing materials;
- Benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking;
- Proper maintenance of parking lot surfaces (sweeping); and
- Requirements for coverage under EPA's MSGP.

At least two educational messages must be distributed to each audience over the permit term spaced at least a year apart.

3.1.2 TMDL and Water Quality Limited Waterbody Requirements

Public education and outreach programs must also address impaired waterbodies which are shown in **Table 2-1**, with updates provided in **Appendix B** as they become available. As noted in **Table 2-1**, Andover has three waterbodies with an approved TMDL for fecal coliform, one waterbody listed as impaired for E. coli, one waterbody listed as impaired for phosphorous, and five waterbodies listed as impaired for chloride. Each of these impairments have specific education topic requirements as outlined in the 2016 MS4 Permit, and summarized below, and will be included within the education program.

Bacteria TMDL and Water Quality Limited Waterbody Requirements (Residents)

- Annual message encouraging the proper management of pet waste, including noting any existing bylaws where appropriate;
- Disseminate educational materials to dog owners at the time of issuance or renewal of a dog license;
- Describe detrimental impacts of improper pet waste management, requirements for waste collection and disposal, and penalties for non-compliance; and
- Provide information to owners of septic systems about proper maintenance.

Phosphorus Water Quality Limited Waterbody Requirements (Residents & Businesses)

- Spring (March/April): encourage proper use and disposal of grass clippings and use of slow-release and phosphorus-free fertilizers;
- Summer (June/July): encourage proper management of pet waste, including noting any existing ordinances; and
- Fall (August/September/October): encourage the proper disposal of leaf litter.

Chloride Water Quality Limited Waterbody Requirements (Businesses, Industrial, and Private Road Salt Applicators)

- Winter (November/December): proper storage and application rates of winter deicing material and steps that can be taken to minimize salt use.

Due to the extent of impaired waters present throughout the Town, each message will be distributed community-wide.

3.2 Past Public Education Program

In response to requirements under the 2003 permit, Andover has enacted a multifaceted approach to stormwater public education and outreach. The following summarizes the Town’s past public education activities:

- **Newspaper Articles** – the Town has published articles in the online news source *Andover Patch* that include information on stormwater pollution prevention.
- **Educational Flyer** – the Town has published stormwater management information in the annual *Recycling and Trash Collection Guide for Residents* available for download on the Town’s website and in hardcopy at various public buildings.
- **Pet Waste Flyer** – the Town has partnered with the Greenscapes North Shore Coalition to distribute a pet waste informational flyer on pet waste-related stormwater issues.
- **Stormwater Webpage** – the Town’s website has an established “Stormwater Management” section.

3.3 Ongoing Public Education Program

Tables 3-1 through **3-4** summarize Andover’s public education program, by targeted audience, to meet the requirements of the 2016 MS4 Permit. Measurable goals, responsible departments and a schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 3-1. Residential Public Outreach Program

BMP ID#	BMP Materials/Distribution	BMP Topic Description
1-1	Brochures/Pamphlets	Distribute varying promotional materials, such as a “how-to-guide” on raingardens, literature on “greenscaping, septic system maintenance, and pet waste information.
	Displays, Posters, Kiosks	Create informational displays that include information on proper pet waste management, the importance of “greenscaping”, sewer and septic system maintenance, and ways to avoid illicit discharges.
	School Program	Host the Greenscapes “Keeping Water Clean” Program.
	Social Media	Send periodic social media “blast” within seasonal topic information
	Story Map	Create a story map with information on LID
	Presentation	Hold a presentation on the importance of clean water and water conservation

Table 3-2. Businesses, Institutions, & Commercial Public Outreach Program

BMP ID#	BMP Materials/Distribution	BMP Topic Description
1-2	Presentation	Host a presentation with informational topics such as greenscaping, sand/salt storage, and landscape management, n.
	Presentation	Host a presentation with informational topics such as stormwater BMP use, and impervious surface reduction.

Table 3-3. Developers Public Outreach Program

BMP ID#	BMP Materials/Distribution	BMP Topic Description
1-3	Workshops and Literature	<ul style="list-style-type: none"> • Year 1: discuss LID options for reducing runoff and promoting infiltration • Year 3: provide a follow-up session with greater detail
	Trade Show	Greenscapes representatives will attend a trade show to reach out to landscapers and developers on “greenscaping” topics.

Table 3-4. Industrial Public Outreach Program

BMP ID#	BMP Materials/Distribution	BMP Topic Description
1-4	Brochures	Provide general information on LIDs that assist with stormwater management and pollution prevention targeting environmental contacts or property managers at industrial facilities.
	Presentation	Host a presentation on “greenscaping” at an industrial level targeting environmental contacts or property managers at industrial facilities.

3.4 Measuring Public Education Program Effectiveness

During completion of the Town’s annual report as detailed further under **Section 10**, Andover will review the effectiveness of each message and the Town’s overall education program. Effectiveness is expected to vary by message, however will generally be measured based on quantities of materials distributed and feedback from town employees based on observations in their area of work. Educational messages and/or distribution techniques will be modified as needed, should program managers determine that they are ineffective.

4 MCM 2: Public Participation and Involvement

4.1 Summary of Permit Requirements

Under MCM 2, permittees must provide annual opportunities for public participation in the review and implementation of the Town's SWMP as part of a public education and involvement program. All public involvement activities must comply with state public notice requirements. The SWMP and annual reports must be made available so that the public has opportunities to review and comment.

4.2 Past Public Participation and Involvement Opportunities

The following summarizes Andover's past public participation activities that will be continued under the 2016 MS4 Permit:

- **Pesticide Reduction Task Force** – the Town has established a Pesticide Reduction Task Force that developed a Pesticide Use Policy.
- **Stormwater Call Directory** – established a call directory for receiving information submitted by the public, and a database for tracking issues and follow-up actions.
- **Storm Drain Marking** – the Town has stenciled storm drains in the past.
- **Landscape Management Program** – in conjunction with the Greenscapes North Shore Coalition, the Town developed an informational program on landscape management called Greenscapes 101: Create a Healthier Landscape.
- **Partner with Watershed Organizations** – attend meetings with other nearby municipalities as part of the Merrimack Valley Stormwater Collaborative.

4.3 Ongoing Public Participation and Involvement Opportunities

This written SWMP Plan and annual reports are available for review and comment via the Town's website, along with the name, email address and/or phone number of a contact person from the Town government to request additional information or submit comments. This allows the public to comment on the program at least once per year. An updated SWMP Plan will be posted to the website as additional tasks are completed.

Table 4-1 summarizes Andover's proposed Public Participation and Involvement Opportunities BMPs to meet the requirements of the 2016 MS4 Permit. Measurable goals, responsible departments and a schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 4-1. Public Participation and Involvement Program

BMP ID#	BMP	BMP Description	Responsible Parties
2-1	Public Review	Make SWMP Plan and annual reports available on website.	Department of Public Works/Engineering/Information Technology
2-2	Public Participation	Continue to implement the pesticide use policy.	Pesticide Reduction Task Force (Town Departments and Residents)
2-3	Public Participation	Continue to track stormwater-related calls.	Department of Public Works/Engineering Dept., Water Dept., and Town Website Manager(s)
2-4	Public Participation	Establish classroom education/field trip program.	Department of Public Works/Engineering Dept., Water Dept., and Education Department
2-5	Public Participation	Continue to stencil catch basins and replace faded markers.	DPW, Engineering Dept., Water Dept., and Volunteers
2-6	Public Participation	Continue to partner with watershed organizations on stormwater improvements.	Department of Public Works/Engineering Dept., Water Dept., and Conservation Commission

5 MCM 3: Illicit Discharge, Detection, and Elimination

5.1 Summary of Permit Requirements

Under MCM 3, permittees must implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. An “illicit discharge” is any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities. A summary of the required IDDE activities and timelines are provided below.

- **Legal Authority** – the IDDE program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to prohibit, investigate, and eliminate illicit discharges. For permittees authorized by the MS4-2003 permit such as Andover, the ordinance, bylaw, or other regulatory mechanism was required to be effective by May 1, 2008.
- **Sanitary Sewer Overflow** – SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism. Regulated communities must identify all known locations where sanitary sewer overflows (SSOs) have discharged to the MS4 within the previous 5-years. Permittees must also develop an inventory within 1-year of the effective date and update it annually. Upon detection of an SSO, the permittee must eliminate it as quickly as possible and take interim mitigation measures to minimize or eliminate the discharge of pollutants until remediation work is complete.
- **System Mapping** – regulated communities must complete a comprehensive map of their stormwater system in two phases. Phase 1 must be completed within two years and include infrastructure such as outfalls and preliminary catchment delineations, waterbodies, open channel conveyances, interconnections with other MS4s, and structural stormwater BMPs. Phase 2 must be completed within ten years and include information such as outfalls with high accuracy GPS location and refined catchment delineations, catch basins, manholes, pipe connectivity, and sanitary or combined sewer systems as available/applicable.
- **Written Illicit Discharge, Detection, and Elimination Plan** – the 2016 MS4 Permit requires preparation of a comprehensive written IDDE Program or IDDE Plan that provides detailed procedures for assessment and priority ranking of outfalls and interconnections, dry and wet weather outfall sampling, catchment investigation procedures, system vulnerability factor (SVF) assessment, identification of an illicit

discharge, illicit discharge removal, and ongoing screening requirements. The Town has prepared a standalone IDDE Plan separate from this SWMP Plan.

- **Annual IDDE Training** – the 2016 MS4 Permit requires annual IDDE training to be provided to all employees involved in the IDDE program. Training will, at a minimum, include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program.

5.2 Past IDDE Program

The Town of Andover has conducted multiple efforts to identify and eliminate illicit discharges under the previous permit. The following summarizes Andover’s past IDDE activities:

- **Stormwater System Mapping** – the Town has mapped all known outfalls and the majority of other drainage infrastructure. Results have been incorporated into a town-wide GIS system. A copy of the stormwater system mapping is provided in **Appendix C**.
- **Outfall Inspections** – the Town has performed outfall inspections under dry weather conditions.
- **Illicit Discharge Inspections** – the Town performs comprehensive illicit discharge investigations as a result of outfall screening and complaints received from the public.
- **Legal Authority** – the Town has adopted Illicit Discharge Rules and Regulations to address legal requirements under the Town’s General Bylaws, Article XVI, “Stormwater Management and Erosion Control” and is provided in **Appendix D**.

5.3 Ongoing IDDE Program

Andover has a separate written IDDE plan that outlines legal authority, program responsibilities, ranks catchment areas, and outlines procedures for investigation and removal in accordance with the permit. This written plan will be updated and refined as needed to incorporate findings of field investigations.

Table 5-1 outlines Andover’s IDDE program to meet permit requirements. The measurable goals, responsible departments and schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 5-1. IDDE Program

BMP ID#	BMP	BMP Description	Responsible Parties
3-1	SSO Inventory	The Town tracks all SSOs, including those that have discharged to the MS4 system within the past five years as documented in the IDDE Plan and will report on any new SSOs in its annual report.	Department of Public Works/Water & Sewer Division
3-2	Storm Sewer System Map	The Town has mapped all of its known stormwater outfalls and most of the storm drain infrastructure. The Town will continue to update mapping (Appendix C) as new information becomes available such that the full system will be mapped within ten years of the effective date of the permit.	Department of Public Works/Engineering Dept., Consultant
3-3	Written IDDE Program	A written IDDE program has been developed as a separate document from this SWMP.	Department of Public Works/Engineering Dept., Water Dept., Board of Health, and Consultant
3-4	Implement IDDE Program	The IDDE program will be implemented following the program plan developed in the IDDE Plan. All illicit discharges will be documented and follow-up catchment investigations will be conducted.	Department of Public Works/Engineering Dept., Water Dept., Board of Health, and Consultant
3-5	Employee Training	IDDE training for employees will be conducted before activities commence.	Highway Department
3-6	Conduct Dry Weather Screening	Andover will conduct dry weather screening in accordance with screening procedures as outlined in the IDDE Plan.	Department of Public Works/Engineering Dept.
3-7	Wet Weather Screening	Andover will conduct wet weather screening in accordance with screening procedures as outlined in the IDDE Plan.	Department of Public Works/Engineering Dept.
3-8	Ongoing Screening	Andover will conduct dry weather and wet weather screening (as necessary) as outlined in the IDDE Plan.	Department of Public Works/Engineering Dept.

Table 5-1 (continued). IDDE Program

BMP ID#	BMP	BMP Description	Responsible Parties
3-9	IDDE Plan – Illegal Dumping Program	Establish a procedure to receive calls. This will be tracked under BMP 2-3.	Department of Public Works/Engineering Dept., and Board of Health
3-10	IDDE Ordinance/Bylaw	Andover will continue to enforce its existing Illicit Discharge bylaw (Appendix D).	Planning Board, Board of Health, and Selectmen
3-11	Public Education	Incorporate information on illicit discharges into public education.	Department of Public Works/Engineering Dept., Water Dept., and Board of Health

6 MCM 4: Construction Site Stormwater Runoff Control

6.1 Summary of Permit Requirements

Under MCM 4, permittees are required to implement and enforce a program to reduce pollutants in stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance of greater than or equal to one acre within the regulated area. This program shall also regulate disturbances less than one acre if they are part of a larger common plan of development or sale that would disturb one or more acres. A summary of the required Construction Site Stormwater Runoff Control Program activities and timelines are provided below:

- **Legal Authority** – the Construction Site Stormwater Runoff Control Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:
 - Require the use of sediment and erosion control practices at construction sites; and
 - Include controls for other wastes on construction sites.

For permittees authorized by the 2003 MS4 permit such as Andover, the ordinance, bylaw, or other regulatory mechanism was required to be effective by May 1, 2008.

- **Construction Site Stormwater Runoff Control Program** – the 2016 MS4 Permit requires preparation of written Construction Site Stormwater Runoff Control Program procedures that include the following:
 - Pre-construction plan review of the site design, planned operations, planned BMPs during the construction phase, and planned BMPs to manage runoff after development that includes consideration of potential water quality impacts, and procedures for the receipt and consideration of information submitted by the public. The site plan review procedure shall also include evaluation of opportunities for use of low impact design and green infrastructure;
 - Site inspections and enforcement actions to take place both during construction of BMPs and after construction of BMPs. Procedures must define the person responsible for site inspections, qualifications necessary to perform inspections, who has authority to implement enforcement procedures, the ability to impose sanctions to ensure program compliance, the use of standardized inspection forms (if appropriate), and how the number of inspections and enforcement actions will be tracked for reporting in the Annual Report; and
 - Requirements for construction site operators to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site.

6.2 Past Construction Site Stormwater Runoff Control Measures

The following summarizes Andover's past Construction Site Stormwater Runoff Control Program activities:

- **Stormwater Management Legal Authority** – the Town of Andover enacted the “Stormwater Management and Erosion Control Bylaw”, along with accompanying regulations for all activities disturbing one acre or more.
- **Sediment and Erosion Controls** – the “Stormwater Management and Erosion Control Bylaw” accompanying regulations require use of erosion and sediment controls, and proper management of on-site construction and waste materials.
- **Construction Site Inspections** – the “Stormwater Management and Erosion Control Bylaw” accompanying regulations require regular inspections of construction sites, including a preconstruction meeting, at least weekly throughout the construction process, and a final inspection. Results are documented on a standardized construction form.
- **Plan Reviews** – the “Stormwater Management and Erosion Control Bylaw” accompanying regulations establish an Interdepartmental Review Committee that includes representatives from varying town departments, including DPW, Conservation, Planning, Health, Public Safety, and Building who complete plan reviews prior to construction commencement.

6.3 Ongoing Construction Site Stormwater Runoff Control Program

The Town has reviewed its existing Stormwater Management and Erosion Control bylaw and regulations for compliance with the 2016 MS4 Permit (refer to **Appendix D**) and found they generally satisfy all requirements. **Table 6-1** outlines Andover's ongoing Construction Site Stormwater Runoff Control Program. Measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 6-1. Construction Site Stormwater Runoff Control Program

BMP ID#	BMP	BMP Description	Responsible Parties
4-1	Site Inspection and Enforcement of Erosion Sediment Control (ESC) Measures	Existing regulations require site inspections and the ability to impose sanctions. Inspections may be performed by the Planning Board or an Environmental Site Monitor who must be a professional engineer or trained professional. The authority for site inspection and enforcement is clearly designated to the Planning Board. No further action is needed.	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission, & Consultant
4-2	Site Plan Review	Existing regulations require application submittal and outline procedures for site plan review, including a pre-construction review of the site design with a public hearing and notification of abutters. Developers must submit a plan that includes planned construction site operations and phasing, planned BMPs during construction, and planned BMPs to manage stormwater after development. Andover will also track the number of site reviews for annual reporting purposes.	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission, & Consultant
4-3	Erosion and Sediment Control	Existing regulations require construction operators to install erosion and sediment controls at construction sites and meet the Massachusetts Stormwater Management Standards. No further action is needed.	Planning Board and Selectmen
4-4	Waste control	Existing regulations require construction operators to properly manage on-site construction and waste materials, including concrete truck washout, chemicals, litter and sanitary waste. No further action is needed.	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission
4-5	Construction Public Complaint Hotline	Establish a procedure for the receipt of information submitted by the public. This will be tracked under BMP 2-3.	Planning Board and Department of Public Works/Engineering Dept.

7 MCM 5: Stormwater Management in New Development and Redevelopment

7.1 Summary of Permit Requirements

7.1.1 Core Permit Requirements

Under MCM 5, permittees shall develop, implement, and enforce a program to address post-construction stormwater runoff from new development and redevelopment sites that disturb one or more acres and discharge into an MS4 system. This program shall also regulate disturbances less than one acre if they are part of a larger common plan of development or sale that would disturb one or more acres. A summary of the required Stormwater Management in New Development and Redevelopment, also known as Post Construction Stormwater Management, activities and timelines are provided below:

Legal Authority – the Post Construction Stormwater Management Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism enacted or updated within two years of the effective permit date to:

- Require LID site planning and design strategies to maximum extent feasible;
- Meet many of the requirements of the Massachusetts Stormwater Handbook and associated stormwater standards;
- Incorporate runoff volume storage and/or pollutant removal requirements, specifically:
 1. Stormwater management systems on new development sites shall be designed to:
 - a) Not allow untreated stormwater discharges (Standard 1), control peak runoff rates (Standard 2), recharge groundwater (Standard 3), eliminate or reduce discharge of pollutants from land uses with higher pollutant loads (Standard 5), protect Zone II or Interim Wellhead Protection Areas (Standard 6), and implement long term maintenance practices (Standard 9); and
 - b) Require that all stormwater management systems be designed to:
 - Retain the volume of runoff equal to at least 1.0 inches over the total post-construction impervious surface area on the site and/or
 - Remove 90% of the average annual Total Suspended Solids (TSS) load and 60% of the average annual Total Phosphorus (TP) load from the total post-construction impervious surface area on the site.
 2. Redevelopment Requirements:
 - a) Stormwater management systems on Redevelopment sites shall meet the following to the maximum extent feasible:

- Standards 1, 2, and 3, and pretreatment and structural BMP requirements of Standards 5 and 6.
 - b) Stormwater management systems on Redevelopment sites shall also improve existing conditions by requiring stormwater BMPs be designed to:
 - Retain the volume of runoff equal to at least 0.80 inches over the total post-construction impervious surface area on the site and/or
 - Remove 80% of the average annual TSS load and 50% of the TP load from the total post-construction impervious area on the site.
 - c) Redevelopment activities that are limited to maintenance and improvement of existing roads, (including widening less than a single lane, adding shoulders, improving existing drainage systems, and repaving projects) shall improve existing conditions where feasible and are exempt from other parts above.
- **As-Built Submittals** – the permittee must require the submission of as-built drawings within two years after completion of construction projects and include structural and non-structural controls.
- **Operation and Maintenance** – the program must include procedures to ensure adequate long-term operation and maintenance of BMPs are established after completion of a construction project, along with a dedicated funding source within two years of the effective permit date.
- **Regulatory Assessment** – the permittee must complete an assessment of existing regulations that could affect creation of impervious cover to determine if changes are required to support LID. Additionally, the permittee must assess current regulations to ensure that certain green infrastructure is allowable where feasible. A report documenting the assessment must be completed within four years of the effective permit date.
- **Identification of Potential Retrofit Sites** – the permittee must identify municipal properties and infrastructure within four years of the effective permit date to determine at least five properties that could be modified or retrofitted with stormwater BMP improvements. The permittee must report on all properties that have been modified or retrofitted with BMPs to mitigate impervious area and maintain an ongoing list of five sites until such time as less than five sites remain.

7.1.2 TMDL and Water Quality Limited Waterbody Requirements

The Town of Andover must also address requirements for impaired waterbodies which are shown in **Table 2-1**. As noted in **Table 2-1**, Andover has waterbodies with impairments for

phosphorus, chloride, and turbidity. Each of these impairments have specific post-construction stormwater requirements as outlined in the 2016 MS4 Permit, and summarized below.

- **Legal Authority (Phosphorus)** – mandate the use of stormwater BMPs optimized for phosphorus removal as part of new development and redevelopment projects for those located within the Merrimack River watershed.
- **Retrofit Sites (Phosphorus)** – retrofit opportunities must consider opportunities for constructing infiltration BMPs for properties within the Merrimack River watershed.
- **Legal Authority (Chloride)** – require measures to prevent exposure of any salt stockpiles to precipitation and runoff at all privately owned commercial and industrial properties within watersheds draining to waterbodies impaired for chloride.
- **Salt Use Minimization (Chloride)** – establish procedures and requirements to minimize salt usage and require use of salt alternatives where determined necessary.
- **Spill Containment and Water Quality Treatment (Turbidity)** – stormwater systems designed on commercial and industrial land use area draining to the water quality limited waterbody shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. Any stormwater management system designed to infiltrate stormwater on commercial or industrial sites must provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.

7.2 Past Post Construction Stormwater Management

The Town of Andover has established some measures for post construction stormwater management. The following summarizes Andover’s past Post-Construction Site Stormwater Management Program activities:

- **Legal Authority** – Andover enacted “Stormwater Management and Erosion Control Bylaw”, along with accompanying regulations for all activities disturbing one acre or more.
- **Submittal of As-Built Plans** – the “Stormwater Management and Erosion Control Bylaw” accompanying regulations require the submittal of as-built plans detailing the actual stormwater management system as installed, and that they be certified by a Professional Engineer.

- **Submittal of an Operation and Maintenance Plan** – the “Stormwater Management and Erosion Control Bylaw” accompanying regulations require development of an O&M Plan that in part requires a maintenance agreement with responsible parties, schedule for maintenance, and financing responsibilities.
- **Design Guidelines** – the “Stormwater Management and Erosion Control Bylaw” accompanying regulations include design criteria related to the latest edition of MassDEP’s Stormwater Management Handbook and Andover’s Subdivision Rules and Regulations including stormwater recharge, pretreatment, flooding protection, channel protection, water quality volume requirements, and hydrologic/hydraulic design criteria.
- **Homeowners Association BMP Inspection and Maintenance** – the Town tracks BMP inspections and maintenance for all Homeowners Associations (HOAs) with stormwater BMPs. HOAs must submit annual reports to the Town documenting work performed during the previous year.

7.3 Ongoing Post-Construction Stormwater Management Program

Table 7-1 outline Andover’s Post-Construction Stormwater Management Program to meet the requirements of the 2016 MS4 Permit. Measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 7-1. Post-Construction Site Stormwater Management Program

BMP ID#	BMP	BMP Description	Responsible Parties
5-1	As-built plans for on-site stormwater control	The Town of Andover currently requires final submittal of as-built drawings of all structural stormwater controls and treatment BMPs required for the site and that they be certified by a Professional Engineer. Andover also requires development of an O&M Plan that in part requires a maintenance agreement with responsible parties, schedule for maintenance, and financing responsibilities. Andover will review its existing regulations to determine if further changes are required, however it is not anticipated that substantial changes are required to meet this item.	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission

Table 7-1 (continued). Post-Construction Site Stormwater Management Program

BMP ID#	BMP	BMP Description	Responsible Parties
5-2	Target properties to reduce impervious areas	Andover will complete an inventory of municipal properties (Appendix E) that could be retrofitted with stormwater BMPs by Year 4, along with a review of existing site conditions. This inventory will be updated continuously starting in Year 5. Retrofit opportunities must also consider the potential to reduce phosphorus discharges for properties within the Merrimack River watershed. As BMPs are constructed, the inventory will be updated so that it always contains at least five sites in the inventory for potential improvement.	Planning Board, Dept. of Public Works/ Engineering Dept., Plant & Facilities
5-3	Allow green infrastructure	Andover will develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist. The report will be included in Appendix D .	Planning Board
5-4	Street design and parking lot guidelines	Andover will develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support LID options. The report will be included in Appendix D .	Planning Board
5-5	Ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Andover is reviewing its existing regulations and a sample bylaw and determining changes that must be made to suit the Town. Andover anticipates that the final bylaw will be developed during 2019, and put on the agenda for the spring 2020 town meeting for adoption by voters. Ongoing progress on legal authority is documented in Appendix D .	Planning Board & Conservation Commission

8 MCM 6: Good Housekeeping and Pollution Prevention

8.1 Summary of Permit Requirements

Under MCM 6, permittees shall develop and implement an operations and maintenance program to reduce stormwater pollution from permittee activities. This includes developing procedures related to parks and open space, buildings and facilities, vehicles and equipment, and stormwater infrastructure maintenance. A summary of the required Good Housekeeping and Pollution Prevention for Permittee Owned Operations activities and timelines is provided below.

8.1.1 Stormwater Operation and Maintenance Plans

The permittee must complete an inventory of all parks and open space, buildings and facilities where pollutants are exposed to stormwater runoff, and vehicles and equipment within two years of the permit effective date. The inventory must be reviewed annually and updated as necessary. Upon completion, the permittee must establish written procedures as part of an O&M Plan within two years of the permit effective date for the following items:

Parks and Open Space

- Proper use, storage, and disposal of pesticides, herbicides, and fertilizers;
- Lawn maintenance and landscaping activities to protect water quality, such as reducing mowing, lawn clippings handling, and use of alternative landscaping materials;
- Pet waste handling collection and disposal locations at all locations where pets are permitted, including signage;
- Control of waterfowl in areas where they congregate to reduce waterfowl droppings from entering the MS4s;
- Management of trash containers; and
- Addressing erosion or poor vegetative cover, particularly near a surface waterbody.

Buildings and Facilities

- Use, storage, and disposal of petroleum products and other potential pollutants.
- Materials handling training to applicable employees;
- Ensuring that Spill Prevention, Control, and Countermeasures (SPCC) Plans are in place if needed (aboveground petroleum storage greater than 1,320 gallons or underground petroleum storage greater than 42,000 gallons);
- Dumpsters and other waste management equipment; and
- Sweeping parking lots and keep facility areas clean to reduce pollutants in runoff.

Vehicles and Equipment

- Storage of vehicles to prevent fluid leaks to stormwater;
- Fueling area evaluation, including feasibility of fueling under cover; and

- Preventing vehicle wash waters from entering surface waters or the MS4.

Phosphorus Water Quality Limited Waterbody Requirements

- Reducing fertilizer and/or using slow release fertilizers on Town-owned properties;
- Properly managing grass cuttings and leaf litter on Town-owned property; and
- Prohibiting blowing organic waste onto impervious surfaces.

8.1.2 Infrastructure Operation and Maintenance Plan

The permittee must establish written procedures as part of an Operation and Maintenance Plan within one year of the permit effective date to ensure that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4 for the following items:

Catch Basin Cleaning

- Prioritization of catch basins located near construction activities for more frequent inspection and maintenance;
- Establishing a schedule with a goal that at the time of maintenance, no catch basin is more than 50% full;
- For catch basins that are more than 50% full during two consecutive inspections or cleaning events, methods for investigating the contributing drainage area for sources of excessive sediment loads; and
- Establishing a plan for optimizing catch basin cleaning, inspections, and documentation.

Street Sweeping

- Sweeping all streets and permittee-owned parking lots, with the exception of rural uncurbed roads with no catch basins or high-speed limited access highways at least once per year in the spring following winter sanding events;
- More frequent sweeping of targeted areas based on inspections, land use, or known water quality impacts;
- Increasing street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year; once in the spring (following winter activities such as sanding) and at least once in the fall (following leaf fall) for areas that discharge to water quality limited waterbodies and their tributaries where phosphorus is the cause of the impairment; and
- Increasing street sweeping to a schedule determined by the permittee to target areas with potential for high pollutant loads for areas that discharge to water quality limited waterbodies and their tributaries where solids, oil and grease, or metals is the cause of impairment.

Catch Basin and Street Sweeping Residuals Management

- Ensure proper storage of catch basin cleanings and street sweepings prior to disposal or reuse such that they do not discharge to receiving waters.

Winter Operation and Maintenance

- Establish and implement procedures for winter road maintenance including the use and storage of salt and sand
- Minimize the use of sodium chloride and other salts and evaluate of opportunities to use alternative materials; and
- Ensure that snow disposal activities do not result in disposal of snow into waters of the United States.

8.1.3 Stormwater Pollution Prevention Plans

The permittee must establish written Stormwater Pollution Prevention Plans (SWPPPs) within two years of the permit effective date for the following permittee-owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater as determined by the permittee. SWPPPs must address a number of components, including the following:

- Pollution Prevention Team;
- Facility description, identification of potential pollutant sources, and identification of stormwater controls;
- Stormwater management practices, including measures to minimize or prevent exposure, good housekeeping and preventative maintenance, spill prevention and response, erosion and sediment control, management of runoff, salt storage, employee training, and control measure maintenance; and
- Procedures for site inspections and sampling.

8.1.4 Stormwater BMP Inspections

The permittee must establish and implement written inspection and maintenance procedures and frequencies for all structural stormwater treatment structures, such as infiltration and detention basins, proprietary stormwater treatment structures, gravel wetlands, etc. All permittee-owned stormwater treatment structures (excluding catch basins) shall be inspected at least annually.

8.2 Past Good Housekeeping and Pollution Prevention Program

The following summarizes Andover's past good housekeeping and pollution prevention activities:

- **Street and Parking Lot Sweeping** – Andover sweeps streets and Town-owned parking lots twice a year. High priority areas are also swept more frequently, as needed, such as heavily developed areas.
- **Catch Basin Cleaning** – the Town cleans approximately ½ of its catch basins per year.

- **BMP Inspection and Maintenance** – the Town inspects all known stormwater BMPs annually using a standardized inspection form and performs maintenance as needed.
- **Winter Roadway Maintenance Optimization** – Andover prepared and documented existing and proposed winter O&M items. These are included under a separate Operation and Maintenance document as noted under Section 1.4.
- **Operation and Maintenance Program** – the Town developed an extensive O&M program that includes various non-structural BMPs, including material storage, floor drain compliance, vehicle washing, spill prevention, pesticide and herbicide application, and compliance with other permits such as Spill Prevention Control and Countermeasures (SPCC) regulations. Additionally, all applicable employees are trained on stormwater-related topics annually.

8.3 Ongoing Good Housekeeping and Pollution Prevention Program

Table 8-1 outlines Andover’s plans to meet the requirements of the 2016 MS4 Permit to establish a Good Housekeeping and Pollution Prevention Program. Measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 8-1. Good Housekeeping and Pollution Prevention Program

BMP ID#	BMP	BMP Description	Responsible Parties
6-1	O&M procedures	Andover will create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment to supplement its existing program as needed. These will be incorporated into a separate O&M Plan.	Department of Public Works/Engineering and Plant & Facilities
6-2	Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Andover will create an inventory of all Town facilities for incorporation into the O&M Plan.	Plant & Facilities
6-3	Infrastructure O&M	Establish and implement written program for repair and rehabilitation of MS4 infrastructure. Infrastructure O&M SOPs will be included in the Town’s O&M Plan as they are developed.	Department of Public Works/Engineering and Plant & Facilities

Table 8-1 (continued). Good Housekeeping and Pollution Prevention Program

BMP ID#	BMP	BMP Description	Responsible Parties
6-4	Stormwater Pollution Prevention Plans (SWPPPs)	Andover will perform a preliminary analysis of its maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater to determine which facilities, if any, are located within areas that drain to the MS4. This assessment will take place during the first half of Year 2 to determine which facilities require SWPPPs. Should SWPPPs for any facility be required, they will be prepared by the end of Year 2. A listing of facilities evaluated and status of SWPPPs will be maintained in Appendix F .	Department of Public Works/Engineering and Plant & Facilities
6-5	Catch basin cleaning	Andover currently cleans and inspects all catch basins on an annual basis. The Town has developed a plan for prioritizing catch basin cleaning with a goal that no catch basins are more than 50% full of sediment at any time, which is provided in Appendix G . Catch basin cleaning SOPs are also included in the prioritization plan and have been included in the Town's O&M Plan.	Department of Public Works/Highway Division and Consultant
6-6	Street sweeping program	Andover sweeps all streets and permittee-owned lots twice a year. Street sweeping schedule and SOPs are found in Appendix H .	Department of Public Works/Highway Division
6-7	Road salt use optimization program	Andover developed a SOP for winter road maintenance that optimizes the use of salt. This is included in the Town's separate O&M Plan.	Department of Public Works/Highway Division
6-8	Inspection and maintenance of stormwater treatment structures	An inventory of known structural stormwater BMPs within the Town's regulated area is included in Appendix I . SOPs for performing inspections and maintenance are included in the separate O&M Plan.	Department of Public Works/Highway Division, Plant and Facilities Dept., Water/Sewer Dept.

9 TMDL and Impaired Waters Controls

9.1 Permit Requirements

The 2016 MS4 Permit requires regulated operators of MS4s to determine whether stormwater discharges from their MS4 contribute to any impaired waterbodies, including those subject to an approved TMDL and certain water quality limited waterbodies. Water quality limited waters are any waterbodies that do not meet applicable water quality standards, including waterbodies listed in categories “4a” and “5” on the Massachusetts Integrated List of Waters, also known as the “303(d) List”. MassDEP is responsible for preparing TMDLs for many of these listed waters to identify the problem pollutant and establish water quality goals. As shown in **Table 2-1**, the Town of Andover has multiple waterbodies on the Massachusetts Integrated List, however, not all of these impairments are associated with pollutants and not all must be addressed under the 2016 MS4 Permit.

As shown in **Table 9-1**, the Town has three waterbodies with an approved TMDL (those that have been approved by EPA as of the effective date of the permit, or July 1, 2018) for fecal coliform and are regulated under the 2016 MS4 Permit. Thus, the Town is required to implement the requirements as outlined in Appendix F of the 2016 MS4 Permit.

Additionally, the Town has multiple waterbodies classified as water quality limited waterbodies for phosphorus, E. coli, chloride, and turbidity (**Table 9-2**) and thus is required to implement requirements as outlined in Appendix H of the 2016 MS4 Permit.

Table 9-1. TMDL Requirements

Waterbody Names	Impairment	2016 Permit Requirements	Responsible Parties
<ul style="list-style-type: none">Rogers BrookShawsheen River (MA83-18 and -19)Unnamed Trib. to Meadow Brook, known as "Pinnacle Brook"	Fecal Coliform	Appendix F, Part A.II	Plant & Facilities, Department of Public Works, Board of Health

Table 9-2. Water Quality Limited Requirements

Waterbody Names	Impairment	2016 Permit Requirements	Responsible Parties
<ul style="list-style-type: none">Merrimack River (MA84A-03 and -04)	Phosphorus	Appendix H, Part II	Plant & Facilities, Department of Public Works
<ul style="list-style-type: none">Fish BrookMerrimack River (MA84A-03 and -04)	E. coli	Appendix H, Part III	Plant & Facilities, Department of Public Works, Board of Health

Table 9-2 (continued). Water Quality Limited Requirements

Waterbody Names	Impairment	2016 Permit Requirements	Responsible Parties
<ul style="list-style-type: none">• Fish Brook• Unnamed Trib to Shawsheen River starts near Dascomb Rd• Unnamed Trib. to Meadow Brook, known as "Pinnacle Brook"	Chloride	Appendix H, Part IV	Plant & Facilities, Department of Public Works
<ul style="list-style-type: none">• Brackett Pond• Rogers Brook• Collins Pond• Salem Pond• Rabbit Pond	Turbidity	Appendix H, Part V	Plant & Facilities, Department of Public Works

9.1.1 Fecal Coliform TMDL & E. coli Limited Water Quality Requirements

Bacteria TMDL and water quality limited waters have the same requirements under the permit. To address the discharge of bacteria to Rogers Brook, the Shawsheen River, Pinnacle Brook, Fish Brook and the Merrimack River from its MS4, the Town of Andover must implement the following requirements as outlined under Appendix F, Part III and Appendix H, Part III of the 2016 Permit.

- **Public Education** – supplement the Residential education program with an annual message encouraging the proper management of pet waste and disseminate educational materials to dog owners at the time of issuance or renewal of a dog license. Education materials shall describe the detrimental impacts of improper management of pet waste, requirements for waste collection and disposal, and penalties for non-compliance. The Town also must provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria or pathogens.
- **Illicit Discharge, Detection, and Elimination** – designate catchments draining to pathogen impaired segments as “Problem Catchments” or “High” priority.

Public education requirements have been incorporated into future public education outreach components as described in Section 3. IDDE requirements have been incorporated into Andover’s IDDE Plan.

9.1.2 Phosphorus Water Quality Limited Waterbody Requirements

To address the discharge of phosphorus to the Merrimack River and its tributaries from its MS4, the Town of Andover must implement the following requirements as outlined under Appendix H, Part II of the 2016 Permit.

- **Public Education** – supplement the Residential and Business/Commercial/Institution education programs with additional annual messages as follows:
 - Spring (April-May): Proper use and disposal of grass clippings and use of slow-release and phosphorus-free fertilizers;
 - Summer (June-July): Proper management of pet waste; and
 - Fall (August-October): Proper disposal of leaf litter.
- **Stormwater Management in New Development and Redevelopment** – supplement standard permit bylaw requirements to also mandate the use of stormwater BMPs optimized for phosphorus removal as part of new development and redevelopment projects. Additionally, retrofit opportunities must consider opportunities for constructing infiltration BMPs for properties within the Merrimack River watershed.
- **Good Housekeeping and Pollution Prevention** – establish requirements for reducing fertilizer usage and/or using slow release fertilizers on Town-owned properties, procedures for properly managing grass cuttings and leaf litter on Town-owned property, and prohibit blowing organic waste onto impervious surfaces. Additionally, street sweeping must be increased to at least twice per year, once in the spring and once in the fall.

The Town of Andover will also prepare a Phosphorus Source Identification Report by the end of Year 4 that generally does the following:

- Identifies, delineates, and prioritizes areas of town at the catchment-level that have the highest phosphorus loading potential based on land use and other factors;
- Accounts for the urbanized area that discharges within the Merrimack River watershed;
- Determines impervious area based on catchment delineations;
- Accounts for any screening results performed under MCM 3 when developing conclusions; and
- Identifies potential retrofit opportunities for installing structural BMPs during redevelopment.

Upon completion of the Phosphorus Source Identification Report, the Town will evaluate all properties identified under the report and under BMP 5-2 as presenting retrofit opportunities to:

- Identify the next planned redevelopment activity or planned retrofit date;
- Determine an estimated cost of redevelopment or retrofit BMPs; and
- Determine the engineering and regulatory feasibility of BMP installation.

Upon completion, the Town will provide a list of planned structural BMPs, along with a plan and schedule for implementation by the end of Year 5. At least one BMP must be designed and constructed as a demonstration project by the end of Year 6 that targets a catchment with a high phosphorus load potential. Remaining structural BMPs must be constructed according to the provided plan and schedule. Phosphorus removals must be tracked and reported annually.

9.1.3 Chloride Water Quality Limited Waterbodies Requirements

To address the discharge of chlorides to chloride impaired waters as outlined in **Table 9-2**, the Town must implement the following requirements as outlined under Appendix H, Part IV of the 2016 Permit.

- **Develop a Salt Reduction Plan** – The Town will develop a Salt Reduction Plan that includes specific actions designed to achieve salt reduction on municipal roads and facilities and on private facilities that discharge to its MS4 within three years of the effective date of the permit and implement the plan within five years. Planned activities for salt reduction on municipal facilities may include but are not limited to:
 - Operational changes such as pre-wetting, pre-treating the salt stockpile, increasing plowing prior to de-icing, monitoring of road surface temperature, etc.;
 - Implementation of new or modified equipment providing pre-wetting capability, better calibration rates, or other capability for minimizing salt use;
 - Training for municipal staff and/or contractors engaged in winter maintenance activities;
 - Adoption of guidelines for application rates for roads and parking lots;
 - Regular calibration of spreading equipment;
 - Designation of no-salt and/or low salt zones; and
 - Measures to prevent exposure of salt stockpiles (if any) to precipitation and runoff.

The plan should include an estimate of the total tonnage of salt reduction expected by each activity and a schedule for implementation of planned activities. The completed plan must be submitted to EPA along with the annual report following the Salt Reduction Plan's completion, and each annual report must provide an update on progress made.

- **Public Education** – supplement the educational program with an annual message to private road salt applicators, commercial, and industrial site owners on proper storage and application rates of winter deicing material and steps that can be taken to minimize salt use in the November/December timeframe.

- **Stormwater Management in New Development and Redevelopment** – establish procedures and requirements to minimize salt usage and require use of salt alternatives where determined necessary.
- **Regulatory Mechanism** – establish a regulatory mechanism requiring measures to prevent exposure of any salt stockpiles to precipitation and runoff at all privately owned commercial and industrial properties;
- **Tracking** – The Town of Andover must track the amount of salt applied to all municipally owned and maintained surfaces and reporting of salt use during annual reporting once the Salt Reduction Plan has been completed.

The Town will address each of these requirements within three years and ensure full implementation within five years of the effective permit date.

9.1.4 Turbidity Water Quality Limited Waterbodies Requirements

To address discharges from the MS4 to turbidity impaired waters outlined in **Table 9-2**, the Town must implement the following requirements as outlined under Appendix H, Part III of the 2016 Permit.

- **Stormwater Management in New Development and Redevelopment** – Stormwater management systems designed on commercial and industrial land use areas draining to the water quality limited waterbody shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. Any stormwater management system designed to infiltrate stormwater on commercial or industrial sites must provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.
- **Good Housekeeping and Pollution Prevention** – increase street sweeping frequency of all municipal streets and parking lots to a schedule determined by Andover to target areas with potential for high pollutant loads. This may include increased sweeping in commercial and high-density residential areas, or largely impervious drainage areas. Prioritize inspection and maintenance for catch basins to ensure that no sump is more than 50 percent full. Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings. Include street sweeping schedule developed to target high pollutant loads in each annual report.

Stormwater management requirements for new and redevelopment will be addressed as part of the regulatory and other program updates to be completed during Year 2. The Town of Andover has addressed street sweeping and catch basin cleaning requirements under Section 8.3.

10 Annual Reporting

The Town of Andover will submit annual reports each year of the permit term. The reporting period will be a one-year period commencing on the permit effective date, and subsequent anniversaries thereof, except that the first annual report under this permit shall also cover the period from May 1, 2018 to the permit effective date. The annual report is due 90 days from the close of each reporting period, or by September 29 of each year. The annual reports must contain the following relevant information which should be tracked throughout the year, with documentation maintained within **Appendix J**:

- A self-assessment review of compliance with the permit terms and conditions.
- An assessment of the appropriateness of the selected BMPs.
- The status of any plans or activities, including:
 - Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response;
 - For discharges subject to TMDL or water quality limited waterbody requirements, identification of BMPs used to address the impairment and assessment of the BMPs effectiveness;
 - For discharges to water quality limited waters a description of each BMP and any deliverables required.
- An assessment of the progress towards achieving the measurable goals and objectives of each of the six MCMs:
 - Evaluation of the public education program including a description of the targeted messages for each audience; method and dates of distribution; methods used to evaluate the program; and any changes to the program.
 - Description of the activities used to promote public participation including documentation of compliance with state public notice regulations.
 - Description of IDDE activities including: status of mapping and results of the ranking and assessment; identification of problem catchments; status of all IDDE Plan components; number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located and removed; gallons of flow removed; identification of tracking indicators and measures of progress; and employee training.
 - Evaluation of construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.
 - Evaluation of stormwater management for new and redevelopment including status of ordinance development; review and status of the street design and barriers to green infrastructure assessment; and inventory status.
 - Status of the O&M Programs.
 - Status of SWPPPs, including inspection results.
- All outfall screening and monitoring data during the reporting period and cumulative for the permit term; and a description of any additional monitoring data received by the Town during the reporting period.
- Description of activities for the next reporting cycle.
- Description of any changes in identified BMPs or measurable goals.
- Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.

11 Implementation of Best Management Practices

The Town of Andover's Best Management Practices Plan as outlined in the Town's NOI (**Appendix A**) is summarized in **Table 11-1**.

For consistency with the six MCMs and impaired water requirements, the BMPs are broken down into seven categories:

1. Public Education and Outreach;
2. Public Participation and Involvement;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment;
6. Good Housekeeping and Pollution Prevention; and
7. TMDL and Water Quality Limited Waterbodies Controls

The BMP tables also outline the measurable goals for each BMP to gauge permit compliance, the responsible party(ies) for implementing each BMP, and an implementation schedule to be used throughout the permit period. In addition to the implementation activities outlined in this plan, the Town will also perform the following activities throughout the duration of the permit:

1. **Program Evaluation** – conduct annual evaluations of the Stormwater Management Program for compliance with permit conditions. The evaluation must include a determination of the appropriateness of the selected BMPs in efforts towards achieving the measurable goals outlined in **Table 11-1**.
2. **Record Keeping** – maintain records that pertain to the Stormwater Management Program for a period of at least five years. Records need to be made available to the public and the Town may charge a reasonable fee for copying. Records need not be submitted to EPA or MassDEP unless specifically requested.
3. **Reporting** – submit an annual report to EPA and MassDEP, including the information as noted in Section 10.

Refer to the following link for a copy of the 2016 MA MS4 Permit:

<https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit>

Appendix A

Notice of Intent and Authorization to Discharge

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Page 1 of 24

Part I: General Conditions

General Information

Name of Municipality or Organization: Town of Andover

State: MA

EPA NPDES Permit Number (if applicable): MAR041178

Primary MS4 Program Manager Contact Information

Name: Andrew Flanagan

Title: Town Manager

Street Address Line 1: 36 Bartlet Street

Street Address Line 2:

City: Andover

State: MA

Zip Code: 01810

Email: aflanagan@andoverma.gov

Phone Number: (978) 623-8210

Fax Number:

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed): 2003 SWMP is physically located at: Andover Library, Department of Public Works, and the Health Department

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? Yes

Eligibility Criteria (check all that apply): ☐ A ☐ B ☒ C

National Historic Preservation Act (NHPA) Determination Complete? Yes

Eligibility Criteria (check all that apply): ☒ A ☐ B ☐ C

☒ Check the box if your municipality or organization was covered under the 2003 MS4 General Permit

MS4 Infrastructure (if covered under the 2003 permit)

Estimated Percent of Outfall Map Complete? (Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit)

100%

If 100% of 2003 requirements not met, enter an estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

If outfall map is unavailable on the Internet an electronic or paper copy of the outfall map must be included with NOI submission (see section V for submission options)

<https://andoverma.gov/Stormwater>

Regulatory Authorities (If covered under the 2003 permit)

Illicit Discharge Detection and Elimination (IDDE) Authority Adopted? (Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)

Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY):

07/09/07

Construction/Erosion and Sediment Control (ESC) Authority Adopted? (Part II, III, IV or V, Subpart B.4.(a.) of 2003 permit)

Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY):

02/10/09

Post- Construction Stormwater Management Adopted? (Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)

Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY):

02/10/09

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part II: Summary of Receiving Waters

Please list the waterbody segments to which your MS4 discharges. For each waterbody segment, please report the number of outfalls discharging into it and, if applicable, any impairments.

Massachusetts list of impaired waters: [Massachusetts 2014 List of Impaired Waters- http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf](http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf)

Check off relevant pollutants for discharges to impaired waterbodies (see above 303(d) lists) without an approved TMDL in accordance with part 2.2.2.a of the permit. List any other pollutants in the last column, if applicable.

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
MA83-16 Tributary to Foster Pond, known as "Fosters Brook"	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No impairments
MA83002 Bakers Meadow Pond (BMP)	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No impairments
MA83008 Hussey Brook Pond	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No impairments
MA83-18 Shawsheen River (SR)	3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury In Fish Tissue, Fecal Coliform
MA83-19 Shawsheen River (SR)	56	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fecal Coliform
MA92004 Brackett Pond		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
MA92010 Collins Pond		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excess Algal Growth
MA92023 Frye Pond	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excess Algal Growth, Noxious Aquatic Plants
MA92057 Salem Pond		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
MA84A-40 Fish Brook	12	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
MA84022 Haggets Pond	7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury in Fish Tissue
MA83011 Ballardvale Impoundment (BI)	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Non-native Aquatic Plants, Aquatic Plants (Macrophytes), Mercury in Fish Tissue
MA83005 Fosters Pond (FP)	4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Non-native Aquatic Plants, Mercury in Fish Tissue, Metals, Exotic Species
MA83009 Hussey Pond	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excess Algal Growth
MA83014 Pumps Pond		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Non-Native Aquatic Plants, Mercury in Fish Tissue
MA83015 Rabbit Pond	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
MA83-04 Rogers Brook	16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Physical Substrate Habitat Alterations, Fecal Coliform, Pathogens
MA84A-03 Merrimack River (MR)	19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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[illegible]

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Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

Identify the Best Management Practices (BMPs) that will be employed to address each of the six Minimum Control Measures (MCMs). For municipalities/organizations whose MS4 discharges into a receiving water with an approved Total Maximum Daily Load (TMDL) and an applicable waste load allocation (WLA), identify any additional BMPs employed to specifically support the achievement of the WLA in the TMDL section at the end of part III.

For each MCM, list each existing or proposed BMP by category and provide a brief description, responsible parties/departments, measurable goals, and the year the BMP will be employed (public education and outreach BMPs also requires a target audience). **Use the drop-down menus in each table or enter your own text to override the drop down menu.**

MCM 1: Public Education and Outreach

BMP Media/Category (enter your own text to override the drop down menu)	BMP Description	Targeted Audience	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal	Beginning Year of BMP Implementation
Brochures/Pamphlets	Brochure will consist of a "how-to-guide" for residents on how rain gardens work and how to install them at their home.	Residents	External Contractor	- Number distributed - Resident testimonials	2018-22
Brochures/Pamphlets	An updated version of comprehensive literature, discussing the importance of "greenscaping", small-scale stormwater management practices, sewer/septic system maintenance and other ways to avoid illicit discharge.	Residents	External Contractor	- Number distributed - Resident testimonials	2018
Workshop/ Info Sheet	Workshop and associated literature will discuss LID options for reducing runoff and promoting on-site infiltration. Pricing, maintenance and ordinances will also be discussed.	Developers (construction)	External Contractor	- Number of attendees - Increase in LID use	2018

Displays/Posters/Kiosks	Informational poster will be posted in area with heavy dog/walker traffic. Poster will describe proper pet waste management and disposal.	Residents	External Contractor	- Pilot surveys may be conducted before and after message postings	2018
Social Media Post	Greenscapes will provide content for a social media "blast" on town Facebook etc. EX. Autumnal facebook post describing proper disposal of leaf collection, or springtime post about proper lawn/fertilizer maintenance.	Residents	External Contractor	- Residents testimonials before and after posting - Reduction in water impairment	2018-22
School Curricula/Programs	"Elementary School Name" will host Greenscapes "Keeping Water Clean" Program.	Residents	Schools	- Number of students/ teachers/ volunteers in attendance - Students may be evaluated before and after the program	2018-22
Brochures/Pamphlets	Brochure will include general info on LIDs that can assist in stormwater management and pollution prevention. Content will be targeted to "environmental contacts" at industrial facilities, or property managers where applicable.	Industrial Facilities	External Contractor	- Number distributed - Phone call follow-up	2019

Workshop	Stormwater presentation will discuss specific BMPs for parking lots; how to reduce impervious surfaces, and maintain the space more sustainably.	Businesses/ Institutions and Commercial Facilities	External Contractor	- Number of attendees - Number of presentations re-distributed to commercial representatives.	2019
Displays/Posters/Kiosks	An updated version of informational display, discussing the importance of "greenscaping", small-scale stormwater management practices, sewer/ septic system maintenance and other ways to avoid illicit discharge.	Residents	External Contractor	- Number distributed - Resident testimonials	2019
Brochures/Pamphlets	Pet Waste literature is available in two forms (one page info sheet or rack card) and can be redistributed as necessary.	Residents	External Contractor	- Number distributed - Resident testimonials	2019-22
Workshop	Workshop and literature will go into greater detail, following the workshop regarding low impact development held in year one. City ordinances and associated incentives will be outlined.	Developers (construction)	DPW Construction	- Number of attendees	2020
Workshop	Story Map will outline and describe different examples of existing low-impact-developments in the North Shore Community.	Residents	External Contractor	- Number of map views - Resident testimonials on LID awareness	2020

Meeting/ Presentation	Presentation will discuss proper "greenscaping" practices on a business/commercial level. Content will be targeted to property managers and will include sand/salt storage and landscape management.	Businesses, Institutions and Commercial Facilities	External Contractor	- Number of attendees	2021
Meeting/ Presentation	Presentation will discuss proper "greenscaping" practices on an industrial level. Content will be targeted to property managers and will include sand/salt storage and landscape management.	Industrial Facilities	External Contractor	- Number of attendees	2021
Brochures/Pamphlets	"What not to Flush" rack card will raise resident awareness of the damages of flushing things like wipes and grease in their toilets/sinks.	Residents	External Contractor	- Number distributed - Resident testimonials	2021
Meeting/ Presentation	Greenscapes NS will conduct a "Greenscapes 101" presentation for residents at site of community's choosing. Presentation will discuss the importance of clean and plentiful water.	Residents	External Contractor	- Number of attendees - Residential testimonials	2022

Special Events/Festivals/Fairs	Greenscapes representatives will attend a trade show expo, with the intent of sharing "Greenscaping" practices and the importance of LIDs with Landscapers and Developers.	Developers (construction)	External Contractor	- Number of attendees	2022

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

BMP Categorization	Brief BMP Description (enter your own text to override the drop down menu)	Responsible Department/Parties (enter your own text to override the drop down menu)	Additional Description/ Measurable Goal	Beginning Year of BMP Imple- mentation
Public Review	SWMP Review	Department of Public Works/Engineering	Allow annual review of stormwater management plan and posting of stormwater management plan on website	2019
Public Participation	Public Surveys - Opinions, behaviors, etc.	Department of Public Works/Engineering/Information Technology	Allow public to comment on stormwater management plan annually	2019
Public Participation	Reduce Pesticide Usage in the Fish Brook Watershed	Pesticide Reduction Task Force (Town Departments and Residents)	Implement a Pesticide Use Policy	2017
Public Participation	Establish a Stormwater Call Directory	Department of Public Works/Engineering Dept., Water Dept., and Town Website	Record number of calls to each Department	2017
Public Participation	Establish Classroom Education/Field Trip Program	Department of Public Works/Engineering Dept. Water Dept., and Education Depa	Host one annual classroom educational event or field trip	2003
Public Participation	Catch Basin Stenciling/Markers	DPW, Engineering Dept., Water Dept., and Volunteers	100% of storm drains marked, with door hangers placed in associated neighborhoods.	2003
Public Participation	Work With Watershed Organizations to Incorporate Stormwater Inform	Department of Public Works/Engineering Dept., Water Dept., and Conservation C	Document quarterly meeting topics. Agenda, meeting notes, and attendance sheets. Copies of advertisements and articles about programs.	2003

[illegible]

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP Categorization (enter your own text to override the drop down menu)	BMP Description	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal (all text can be overwritten)	Beginning Year of BMP Implementation
SSO inventory	Develop SSO inventory in accordance of permit conditions	Department of Public Works/Water & Sewer Division	Complete within 1 year of effective date of permit	2012
Storm sewer system map	Create map and update during IDDE program completion	Department of Public Works/Engineering Dept., Consultant	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2003
Written IDDE program	Create written IDDE program	Department of Public Works/Engineering Dept., Water Dept., Board of Health	Complete within 1 year of the effective date of permit and update as required	2003
Implement IDDE program	Implement catchment investigations according to program and permit conditions	Department of Public Works/Engineering Dept., Water Dept., Board of Health	Complete 10 years after effective date of permit	2003
Employee training	Train employees on IDDE implementation	Highway Department	Train annually	2003
Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions	Department of Public Works/Engineering Dept.	Complete 3 years after effective date of permit	2018
Conduct wet weather screening	Conduct in accordance with outfall screening procedure	Department of Public Works/Engineering Dept.	Complete 10 years after effective date of permit	2020
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	Department of Public Works/Engineering Dept.	Complete ongoing outfall screening upon completion of IDDE program	2018
IDDE Plan - Illegal Dumping Program	Establish a Procedure to Receive Calls	Department of Public Works/ Engineering Dept., and Board of Health	Log of complaints and actions taken.	2011
IDDE Ordinance/Bylaw	Develop Illicit Discharge Prohibition Ordinance	Planning Board, Board of Health, and Selectmen	Obtain authorization to control inputs to the municipal drainage system.	2003

[illegible]

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 4: Construction Site Stormwater Runoff Control

BMP Categorization (enter your own text to override the drop down menu or entered text)	BMP Description	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal (all text can be overwritten)	Beginning Year of BMP Implementation
Site inspection and enforcement of Erosion and Sediment Control (ESC) measures	Complete written procedures of site inspections and enforcement procedures	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commis:	Complete within 1 year of the effective date of permit	2009
Site plan review	Complete written procedures of site plan review and begin implementation	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commis:	Complete within 1 year of the effective date of permit	2009
Erosion and Sediment Control	Adoption of requirements for construction operators to implement a sediment and erosion control program	Planning Board and Selectmen	Complete within 1 year of the effective date of permit	2008
Waste Control	Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commis:	Complete within 1 year of the effective date of permit	2008
Construction Public Complaint Hotline	Establish a Procedure for the Receipt of Information Submitted by the Public	Planning Board and Department of Public Works/ Engineering Dept.	Record number of phone calls, copies of articles.	2003

[illegible]

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 5: Post-Construction Stormwater Management in New Development and Redevelopment

BMP Categorization (enter your own text to override the drop down menu or entered text)	BMP Description	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal (all text can be overwritten)	Beginning Year of BMP Implementation
As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP.	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commis	Require submission of as-built plans for completed projects	2019
Target properties to reduce impervious areas	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually	Planning Board, Dept. of Public Works/ Engineering Dept., Plant & Facilities	Complete 4 years after effective date of permit and report annually on retrofitted properties	2018
Allow green infrastructure	Amend the Stormwater Regulations as needed to allow green infrastructure practices when appropriate site conditions exist.	Planning Board	Complete 4 years after effective date of permit and implement recommendations of report	2019
Street design and parking lot guidelines	Research feasibility and implement as appropriate design standards for streets and parking lots to support low impact design options.	Planning Board	Complete 4 years after effective date of permit and implement recommendations of report	2019

[illegible]

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP Categorization (enter your own text to override the drop down menu or entered text)	BMP Description	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal (all text can be overwritten)	Beginning Year of BMP Implementation
O&M procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	Department of Public Works/Engineering and Plant & Facilities	Complete and implement 2 years after effective date of permit	2003
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	Plant & Facilities	Complete 2 years after effective date of permit and implement annually	2019
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Department of Public Works/Engineering and Plant & Facilities	Complete 2 years after effective date of permit	2003
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPP for the Municipal Services Facility on Campanelli Drive	Department of Public Works/Engineering and Plant & Facilities	Complete and implement 2 years after effective date of permit	2019
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	Department of Public Works/Highway Division and Consultant	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2003
Street sweeping program	Sweep all streets and permittee-owned parking lots in accordance with permit conditions	Department of Public Works/Highway Division	Sweep all streets and permittee-owned parking lots once per year in the spring	2003
Road salt use optimization program	Establish and implement a program to minimize the use of road salt	Department of Public Works/Highway Division	Implement salt use optimization during deicing season	2003

Inspections and maintenance of stormwater treatment structures	Establish and implement inspection and maintenance procedures and frequencies	Department of Public Works/Highway Division, Plant and Facilities Dep	Inspect and maintain treatment structures at least annually. Written policy. Records of inspections and maintenance.	2003
O&M Program (General)	Store Paving Tools and Equipment Indoors	Department of Public Works/Highway Division	Designated indoor storage area. Record of Memo.	2003
O&M Program (General)	Rinse Marking Paint Equipment into the Sanitary Sewer	Department of Public Works/Highway Division	Designated indoor storage area. Record of Memo.	2003
O&M Program (General)	Reduce Sediments Entering Storm Drain System	Department of Public Works/Highway Division	Records of sweeping and inspection records.	2003
O&M Program (Vehicle Washing)	Washing Highway Vehicles in accordance with MassDEP Regulations	Department of Public Works/Highway Division/Police/Fire	Record of Memo.	2003
O&M Program (General)	Implement Stormwater BMPs at the Fueling Station	Plant and Facilities Dept.	Repair Records. Better housekeeping for small spills. As-built sketches or plans. Record of memo.	2003
O&M Program (Grounds Care/Integrate Pest Management)	Develop a Use and Storage Plan for CaCl at the Town Yard	Department of Public Works/Highway Division	Use and Storage Plan. As-built sketches or action taken. Record of memo.	2018

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Total Maximum Daily Load (TMDL) Requirements

Use the drop-down menus to select the applicable TMDL, action description to meet the TMDL requirements, and the responsible department/parties. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

[illegible]

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Requirements Related to Water Quality Limited Waters

Use the drop-down menus to select the pollutant causing the water quality limitation and enter the waterbody ID(s) experiencing excursions above water quality standards for that pollutant. Choose the action description from the dropdown menu and indicate the responsible party. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Pollutant	Waterbody ID(s)	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
Turbidity	MA92004, MA92010, MA92057, MA83015, MA83-04	Adhere to requirements in part V of Appendix H	Plant & Facilities, Department of Public Works
Fecal Coliform	MA83-18, MA83-19, MA83-04, MA83-15	Adhere to requirements in part III of Appendix H	Plant & Facilities, Department of Public Works, Board of Health
E. Coli	MA84A-40, MA84A-03, MA84A-04	Adhere to requirements in part III of Appendix H	Plant & Facilities, Department of Public Works, Board of Health
Chloride	MA84A-40, MA83-15, MA83-20	Adhere to requirements in part IV of Appendix H	Plant & Facilities, Department of Public Works
Phosphorus	MA84A-03, MA84A-04	Adhere to requirements in part II of Appendix H	Plant & Facilities, Department of Public Works
	Not needed	Adhere to requirements in part IV of Appendix H	
	Not needed	Adhere to requirements in part III of Appendix H	
	Not needed	Adhere to requirements in part II of Appendix H	
	Not needed	Adhere to requirements in part I of Appendix H	
	Not needed	Adhere to requirements in part IV of Appendix H	
	Not needed	Adhere to requirements in part IV of Appendix H	
	Not needed	Adhere to requirements in part II of Appendix H	
	Not needed	Adhere to requirements in part II of Appendix H	

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Page 23 of 24

Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.1 and 2.2.2 that you have identified as not applicable to your MS4 because you do not discharge to the impaired water body or a tributary to an impaired water body due to nitrogen or phosphorus. Provide all supporting documentation below or attach additional documents if necessary.

Also, provide any additional information about your MS4 program below.

The proposed action under the permit is not likely to adversely affect any Federally-listed endangered or threatened species, including the Northern Long-eared Bat or its formally designated critical habitat. US Fish and Wildlife will be consulted as needed during the permit term on any future BMPs.

Please ignore any "Action Descriptions" where all other columns are blank in Part III: Actions for Meeting Requirements Related to Water Quality Limited Waters. The submission only includes the first five (5) rows listed on page 22.

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Page 24 of 24

Part V: Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

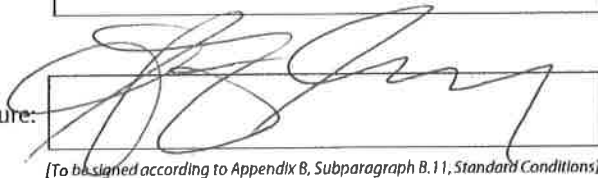
Name:

Andrew Flanagan

Title:

Town Manager

Signature:



[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

Date:

09/27/18

Note: When prompted during signing, save the document under a new file name



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912

VIA EMAIL

June 4, 2019

Andrew Flanagan
Town Manager

And;

Andrew Flanagan
Town Manager
36 Bartlet Street
Andover, MA. 01810
aflanagan@andoverma.gov

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041178, Town of Andover

Dear Andrew Flanagan:

The 2016 NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (MS4 General Permit) is a jointly issued EPA-MassDEP permit. Your Notice of Intent (NOI) for coverage under this MS4 General Permit has been reviewed by EPA and appears to be complete. You are hereby granted authorization by EPA and MassDEP to discharge stormwater from your MS4 in accordance with the applicable terms and conditions of the MS4 General Permit, including all relevant and applicable Appendices. This authorization to discharge expires at midnight on **June 30, 2022**.

For those permittees that certified Endangered Species Act eligibility under Criterion C in their NOI, this authorization letter also serves as EPA's concurrence with your determination that your discharges will have no effect on the listed species present in your action area, based on the information provided in your NOI.

As a reminder, your first annual report is due by **September 30, 2019** for the reporting period from May 1, 2018 through June 30, 2019.

Information about the permit and available resources can be found on our website: <https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit>. Should you have

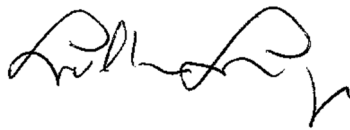
any questions regarding this permit please contact Newton Tedder at tedder.newton@epa.gov or (617) 918-1038.

Sincerely,



Thelma Murphy, Chief
Stormwater and Construction Permits Section
Office of Ecosystem Protection
United States Environmental Protection Agency, Region 1

and;



Lealdon Langley, Director
Wetlands and Wastewater Program
Bureau of Water Resources
Massachusetts Department of Environmental Protection

Appendix B

Impaired Waterbodies

Impaired Waters

Waterbody Name	Segment ID and Category ¹		Impairment(s)	Approved TMDL ²
Ballardvale Impoundment	MA83011	5	(Non-Native Aquatic Plants*)	
			Aquatic Plants (Macrophytes)	
			Mercury in Fish Tissue	
Brackett Pond	MA92004	5	Turbidity	
Collins Pond	MA92010	5	Excess Algal Growth	
			Turbidity	
Field Pond	MA92019	4c	(Non-Native Aquatic Plants*)	
Fish Brook	MA84A-40	5	Chloride	
			E.coli	
Fosters Pond	MA83005	5	(Non-Native Aquatic Plants*)	
			Mercury in Fish Tissue	
			Oxygen, Dissolved	
Frye Pond	MA92023	5	Excess Algal Growth	
Gravel Pit Pond	MA83007	4c	(Non-Native Aquatic Plants*)	
Haggets Pond	MA84022	5	Mercury in Fish Tissue	
Hussey Pond	MA83009	5	Excess Algal Growth	
Merrimack River	MA84A-03 and -04	5	Escherichia coli	
			Mercury in Fish Tissue	
			PCB in Fish Tissue	
			Phosphorus (Total)	
Pomps Pond	MA83014	5	(Non-Native Aquatic Plants*)	
			Mercury in Fish Tissue	
Rabbit Pond	MA83015	5	Turbidity	
Rogers Brook	MA83-04	5	Physical substrate habitat alterations*)	
			Fecal Coliform	2587
			Turbidity	
Salem Pond	MA92057	5	Turbidity	
Shawsheen River	MA83-18	5	Fecal Coliform	2587
			Mercury in Fish Tissue	
			Oxygen, Dissolved	
Shawsheen River	MA83-19	5	Fecal Coliform	2587
			Oxygen, Dissolved	
Unnamed Trib to Shawsheen River starts near Dascomb Rd	MA83-20	5	Chloride	
Unnamed Trib. to Meadow Brook, known as "Pinnacle Brook"	MA83-15	5	Chloride	
			Fecal Coliform	2587

1. Category 4c Waters – impairment not caused by a pollutant, TMDL not required.

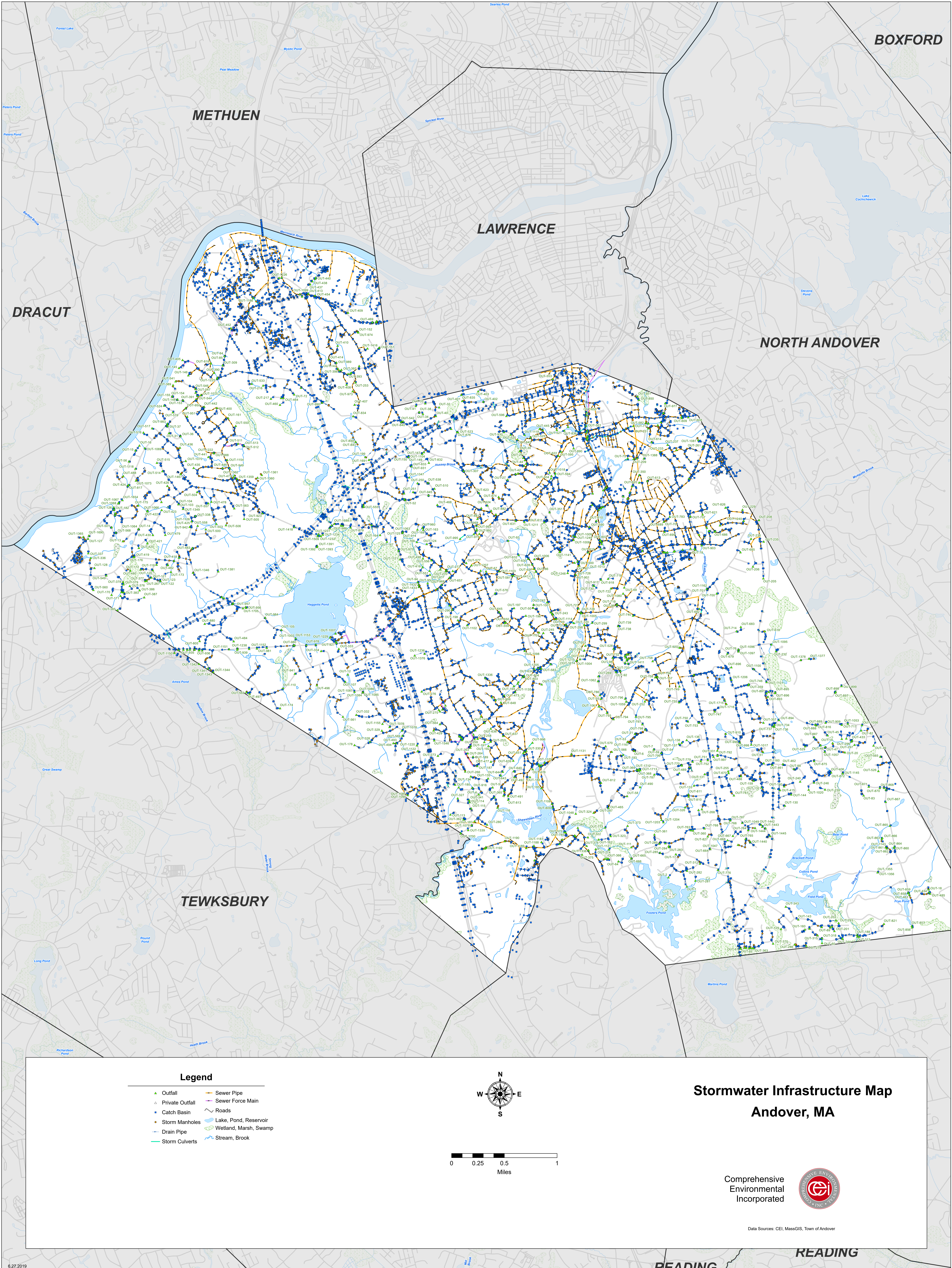
Category 5 Waters – impaired waters that require a TMDL.

2. EPA TMDL # from the 303(d) list. TMDL 2587 is the “Final TMDLs of Bacteria for Shawsheen River Basin”.

*TMDL not required (Non-pollutant)

Appendix C

Stormwater System Mapping



METHUEN

BOXFORD

LAWRENCE

DRACUT

NORTH ANDOVER

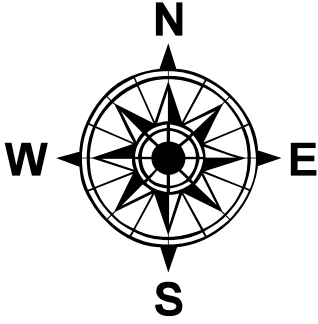
TEWKSBURY

READING

READING

Legend

- ▲ Outfall
- △ Private Outfall
- Catch Basin
- Storm Manholes
- Drain Pipe
- Storm Culverts
- Sewer Pipe
- Sewer Force Main
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook



0 0.25 0.5 1
Miles

Stormwater Infrastructure Map
Andover, MA

Comprehensive
Environmental
Incorporated



Data Sources: CEI, MassGIS, Town of Andover

Mapping Status

Requirement Summary	Status
Phase I – Must be Complete by July 1, 2020	
1. Outfalls and receiving waters	Complete
2. Open channel conveyances	Complete
3. Interconnections with other MS4s	Complete (updates ongoing)
4. Municipally owned structural BMPs	Complete
5. Waterbody names and impairments	Complete
6. Initial catchment delineations by topography	Complete
Phase II – Must be Complete by July 1, 2028	
1. Outfalls with spatial accuracy +/-30 feet	Complete
2. Pipe connectivity	Complete (updates ongoing)
3. Manholes	Complete
4. Catch basins	Complete
5. Refined catchment delineations	Not started
6. Municipal sanitary system	Complete
7. Municipal combined sewer system	Not Applicable

Appendix D

Regulatory Review and Legal Authority

MS4 REGULATORY REVIEW – TOWN OF ANDOVER

TO: Town of Andover
FROM: Nick Cristofori P.E., CEI
DATE: May 21, 2019
SUBJECT: MS4 Regulatory Review

Comprehensive Environmental, Inc. has performed a preliminary review of Andover’s existing bylaws and applicable regulations to determine compliance with Section 2.3.4.a of Minimum Measure 3 – Illicit Discharge Detection and Elimination (IDDE) Program, and Section 2.3.5 of Minimum Measure 4 – Construction Site Stormwater Runoff Control of the 2016 Massachusetts MS4 General Permit. The bylaws and regulations that were reviewed include the following:

- General Bylaws, Article XVI, “Stormwater Management and Erosion Control,” adopted 4/30/2008
- Stormwater Management and Erosion Control Regulations, adopted 2/10/2009

The MS4 Permit requires regulated communities to develop or modify, as appropriate, its regulatory mechanism for post construction stormwater management by the end of Year 2 of the permit term. The revisions will include the incorporation of specific design criteria as outlined in the permit. Given the minor nature of the comments below, CEI recommends that all updates be performed at the same time during Year 2. Written procedures outside of the regulations, such as inspection checklists, can be developed in the interim to satisfy the MS4 requirements.

The following table summarizes the requirements of the permit, existing regulatory mechanisms in the Town that address the requirements and to what extent, and recommendations for regulatory updates or supplemental information for full compliance.

Minimum Measure 3 – Illicit Discharge, Detection, and Elimination		
Required Elements	Current Municipal Regulatory Requirements	Recommended Changes
Section 2.3.4.a. Have adequate legal authority to: <ul style="list-style-type: none">• Prohibit illicit discharges.• Investigate suspected illicit discharges.• Eliminate illicit discharges, including those from properties not owned or controlled by the Town.• Implement appropriate enforcement procedure and actions.	<u>General Bylaws, Article XVI, “Stormwater Management and Erosion Control,” Section 4 “Applicability”</u> prohibits illicit connections. Other sections of Article XVI give the town the authority to investigate and eliminate illicit connects, and enforce the bylaw.	No changes recommended. Current bylaws meet requirements of Section 2.3.4.a.

MS4 REGULATORY REVIEW – TOWN OF ANDOVER

Minimum Measure 4 – Construction Site Stormwater Runoff Control		
Required Elements	Current Municipal Regulatory Requirements	Recommended Changes
<p>Section 2.3.5.a. Implement program that reduces stormwater pollutants at construction sites >1 acre, or < 1 acre if part of a common plan that will disturb >1 acre.</p>	<p><u>General Bylaws, Article XVI, “Stormwater Management and Erosion Control,” Section 4, “Applicability”</u> establishes a program regulates construction sites that disturb >43,560 sq. ft. of land (1.0 ac.), or if part of a common plan that will disturb >43,560 sq. ft. Several exemptions to the bylaw are given, which may cause some required construction activities to be unregulated.</p>	<p>On preliminary review, the current bylaws appear to meet the requirements of section 2.3.5.a. as written. CEI recommends that the exemptions are reviewed in detail to ensure that all required sites are properly regulated.</p>
<p>Section 2.3.5.c.i. and iv. Regulatory mechanism that requires the use of sediment and erosion control practices at construction sites.</p> <p>Ordinance must include requirement for construction site operators to control other wastes on construction sites, such as demolition debris, litter, concrete truck wash-out, and chemicals.</p>	<p><u>Stormwater Management and Erosion Control Regulations, Section IX “Design Criteria,”</u> requires that erosion and sediment controls must be implemented.</p> <p><u>Stormwater Management and Erosion Control Regulations, Section VI “Form and Contents of the Permit Application,”</u> requires a plan which must be designed to properly manage on-site construction and waste materials, which specifically includes concrete truck washout, chemicals, litter and sanitary waste.</p>	<p>Current bylaws meet the requirements of section 2.3.5.c.i and iv. as written. No changes are recommended.</p>

MS4 REGULATORY REVIEW – TOWN OF ANDOVER

Minimum Measure 4 (continued) – Construction Site Stormwater Runoff Control		
Required Elements	Current Municipal Regulatory Requirements	Recommended Changes
<p>Section 2.3.5.c.ii. and v. Written procedures for site inspections and enforcement:</p> <ul style="list-style-type: none"> • Inspection procedures. • Statement that sanctions may be imposed. • Procedures for tracking number of site reviews, inspections, and enforcement actions. <ul style="list-style-type: none"> • Who's responsible for inspecting. • Inspector qualifications. • Inspections to occur during and after BMP construction. <ul style="list-style-type: none"> • Who has authority to implement enforcement. <ul style="list-style-type: none"> • Using standard inspection form (if appropriate). 	<p><u>Stormwater Management and Erosion Control Regulations, Section VIII "Inspection and Site Supervision,"</u> requires inspections certifying that the site is in compliance with the stormwater management permit. It also states that sanctions may be imposed. Permits and certifications are recorded at the registry of deeds, although no procedures are given for tracking inspections and enforcement actions.</p> <p>This section designates 2 inspectors. The Planning Board's agent conducts the final inspection and reviews the inspections of the Environmental Site Monitor (ESM). The ESM is a Town approved professional engineer or trained professional, hired by the applicant. Either the applicant or the ESM must conduct weekly inspections. The Board may require the use of an ESM. Qualifications are not given for the Planning Board's agent.</p> <p><u>General Bylaws, Article XVI, "Stormwater Management and Erosion Control," Section 2, "Definitions"</u> gives the Planning Board, its employees, or designated agent the authority to enforce the bylaw.</p> <p>No standard inspection form is publicly available.</p>	<p>The current Town bylaws and regulations are mostly in compliance with the permit requirements. CEI recommends that the Town develop a standardized inspection form, and procedures for tracking the number of inspections and enforcement actions, if it hasn't done so already. CEI also recommends that the Planning Board's agent be required to conduct their own inspection during BMP construction. Currently they are only required to conduct a final inspection, or review of the ESM's report.</p>

MS4 REGULATORY REVIEW – TOWN OF ANDOVER

Minimum Measure 4 (continued) – Construction Site Stormwater Runoff Control		
Required Elements	Current Municipal Regulatory Requirements	Recommended Changes
Section 2.3.5.c.iii. Requirements for construction site runoff control programs to include BMPs. Program may reference state or Town BMP design standards.	<u>Stormwater Management and Erosion Control Regulations, Section IX “Design Criteria,”</u> requires compliance with the Massachusetts Stormwater Management Standards, which requires construction site runoff controls to include BMPs.	No changes are recommended. The current bylaws meet the requirements of section 2.3.5.c.iii. as written.
Section 2.3.5.c.v. Written procedures for site plan review: <ul style="list-style-type: none"> • Pre-construction review of the site design. • Procedures for the receipt and consideration of information submitted by the public. • Evaluation of Low Impact Development (LID) and Green Infrastructure (GI) opportunities. • Planned construction site operations. • Consideration of water quality impacts. • Planned BMPs during construction. • Planned BMPs to manage stormwater after development. 	<u>Stormwater Management and Erosion Control Regulations, Section VII, “Review and Approval Procedure,”</u> lays out the procedures for the site plan review, including a pre-construction review of the site design with a public hearing and notification of abutters. The Planning Board must find that the plan is consistent with the purpose of the bylaw and meets the design requirements. While an evaluation of LID/GI opportunities is not specifically listed in the procedures, the plans are evaluated for compliance with the Massachusetts Stormwater Management Handbook, which encourages LID/GI. <u>Stormwater Management and Erosion Control Regulations, Section VI, “Form and Contents of the Permit Application,”</u> requires the plan to include: <ul style="list-style-type: none"> • Planned construction site operations and phasing. • Information for the evaluation of water quality impacts. • Planned BMPs during construction. • Planned BMPs to manage stormwater after development. 	The current Town bylaws and regulations are generally in compliance with the permit requirements of section 2.3.5.c.v. For clarity, CEI recommends that a specific evaluation of LID/GI opportunities be incorporated into the site plan review procedures.

Article XVI

STORMWATER MANAGEMENT AND EROSION CONTROL

GENERAL REFERENCES

Zoning — See Art. VIII.

Subdivision rules and regulations — See Art. XIII.

§ 1. Purpose and objective.

- A. The United States Environmental Protection Agency has identified sedimentation and polluted stormwater runoff from land disturbance, land development and redevelopment activities as major sources of water pollution.
- B. The purpose of this bylaw is to prevent or diminish the impacts of sedimentation and polluted stormwater from land disturbance, land development and redevelopment activities by controlling runoff and preventing soil erosion and sedimentation from site construction and development. The bylaw is necessary to protect the Town of Andover water bodies and groundwater resources, to safeguard the health, safety, and welfare of the general public and protect the natural resources of the Town.
- C. The objectives of this bylaw are to comply with state and federal statutes and regulations relating to stormwater discharges and to establish the Town of Andover's legal authority to ensure compliance with the provisions of this bylaw through inspections, monitoring and enforcement by:
 - (1) Protecting water resources;
 - (2) Controlling the volume and rate of stormwater;
 - (3) Requiring practices to manage and treat stormwater runoff generated from new development and redevelopment;
 - (4) Protecting groundwater and surface water from degradation or depletion;
 - (5) Promoting infiltration and the recharge of groundwater;
 - (6) Preventing pollutants from entering the municipal and private storm drain system;
 - (7) Preventing flooding and erosion to abutting properties;
 - (8) Ensuring that soil erosion and sedimentation control measures and stormwater runoff management practices are incorporated into site planning and design process and are implemented and maintained;

- (9) Ensuring adequate long-term operation and maintenance of stormwater best management practices; and
- (10) Requiring practices to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at construction sites that may cause adverse impacts to water quality.

§ 2. Definitions.

ABUTTER — The owner(s) of land adjacent to the land disturbance site.

AGRICULTURE — The normal maintenance or improvement of land in agricultural or aquacultural use, as defined by the Massachusetts Wetlands Protection Act (MGL c. 131, § 40) and its implementing regulations (310 CMR 10.00).

ALTERATION OF DRAINAGE CHARACTERISTICS — Any activity on an area of land that changes the water quality or the force, quantity, direction, timing or location of runoff flowing from the area. Such changes include, but are not limited to, change from distributed runoff to confined, concentrated discharge; change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

APPLICANT — Shall be the owner of record of all of the land shown on any plan submitted for approval to the Planning Board in accordance with the Stormwater Management Bylaw and Regulations.

AUTHORIZED ENFORCEMENT AGENCY — The Town of Andover Planning Board, its employees or agents designated to enforce this bylaw.

BEST MANAGEMENT PRACTICE (BMP) — Any activity, procedure, restraint, or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

CERTIFICATE OF COMPLETION — A document issued by the Planning Board which confirms that all documents and final reports have been submitted and all work required by the terms of a stormwater management permit has been satisfactorily completed in accordance with this bylaw and its regulations.

CLEARING — Any activity that removes the vegetative surface cover and/or organic layer. Clearing activities generally include grubbing activity as defined below.

CONSTRUCTION AND WASTE MATERIALS — Excess or discarded building or construction site materials that may adversely impact water quality, including but not limited to concrete truck washout, chemicals, litter and sanitary waste.

DESIGNATED AGENT — Any person or entity designated by the Planning Board and approved by the Town Manager to assist in the administration, implementation and enforcement of the Stormwater Management and Erosion Control bylaw and Regulations.

DESIGN CRITERIA — Engineering design criteria as contained in the Stormwater Regulations authorized under this bylaw.

DETENTION — The temporary storage of storm runoff.

DEVELOPMENT — The modification of land to accommodate a new use or expansion of use, usually involving construction.

DISTURBANCE OF LAND — Any action, including clearing and grubbing, that causes a change in the position, location, or arrangement of soil, sand, rock, gravel, or similar earth material.

ENVIRONMENTAL SITE MONITOR — A professional engineer or other trained professional selected by the Planning Board or its designee and retained by the Planning Board at the permit holder's expense to periodically inspect the work and report to the Planning Board.

EROSION — The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

ESTIMATED HABITAT OF RARE WILDLIFE AND CERTIFIED VERNAL POOLS — Habitats delineated for state-protected rare wildlife and certified vernal pools for use with the Wetlands Protection Act regulations (310 CMR 10.00) and the Forest Cutting Practices Act regulations (304 CMR 11.00).

GRADING — Changing the level or shape of the ground surface.

GRUBBING — The act of clearing land surface by digging up roots and stumps.

IMPERVIOUS SURFACE — Any material or structure on or above the ground that limits water infiltrating the underlying soil. "Impervious surface" includes, without limitation, roads, paved parking lots, sidewalks, sports courts and rooftops. "Impervious surface" also includes soils, gravel driveways, and similar surfaces with a runoff coefficient (Rational Method) greater than 85.

LAND-DISTURBING ACTIVITY OR LAND DISTURBANCE — Any activity, including clearing and grubbing, that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

MASSACHUSETTS ENDANGERED SPECIES ACT — MGL c. 131A and its implementing regulations at (321 CMR 10.00) which prohibit the "taking" of any rare plant or animal species listed as "endangered," "threatened," or of "special concern."

MASSACHUSETTS STORMWATER MANAGEMENT POLICY — The policy issued by the Department of Environmental Protection, as amended, that coordinates the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act, MGL c. 131, § 40, and the Massachusetts Clean Waters Act, MGL c. 21, §§ 23-56.

MASSACHUSETTS WETLANDS PROTECTION ACT — MGL c. 131, § 40, and its implementing regulations (310 CMR 10.00).

MUNICIPAL STORM DRAIN SYSTEM OR MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) — The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Andover.

OPERATION AND MAINTENANCE PLAN — A plan developed by a Massachusetts licensed professional engineer (PE) describing the functional, financial and organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to ensure that it continues to function as designed.

OUTFALL — The point at which stormwater flows out from a discernible, confined point source or concentrated conveyance into waters of the commonwealth.

OUTSTANDING RESOURCE WATERS (ORWS) — Waters designated by Massachusetts Department of Environmental Protection as ORWs. These waters have exceptional sociologic, recreational, ecological and/or aesthetic values and are subject to more stringent requirements under both the Massachusetts Water Quality Standards (314 CMR 4.00) and the Massachusetts Stormwater Management Standards. ORWs include vernal pools certified by the Natural Heritage Program of the Massachusetts Department of Fisheries and Wildlife and Environmental Law Enforcement, all Class A designated public water supplies with their bordering vegetated wetlands, and other waters specifically designated.

OWNER — Shall be the owner of record of all the land shown on any plan submitted. The owner shall submit the title reference or references from the Essex County Registry of Deeds indicating the owner of record.

PAVEMENT — The surface of an area which consists of bituminous concrete, cement concrete, or paving bricks made of masonry or stone.

PAVING, OVERLAY — The placement of pavement on top of an existing impervious surface. The underlying impervious surface is sometimes milled (partially ground down in thickness) before the overlay is placed.

PAVING, RECLAMATION — A procedure whereby existing pavement is broken and pounded into small fragments.

PERMITTEE — The person who holds a stormwater management permit and therefore bears the responsibilities and enjoys the privileges conferred thereby.

PERSON — An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

RECHARGE — Addition of stormwater runoff to the groundwater by natural or artificial means.

REDEVELOPMENT — Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites.

RESPONSIBLE PARTIES — Owner(s), persons with financial responsibility, and persons with operational responsibility.

RETENTION — The holding of stormwater runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.

RUNOFF — Rainfall, snowmelt, or irrigation water flowing over the ground surface.

SEDIMENT — Mineral or organic soil material that is transported by wind or water, from its origin to another location; the product of erosion processes.

SEDIMENTATION — The process or act of deposition of sediment.

SITE — Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

SLOPE — The incline of a ground surface expressed as a ratio of horizontal distance to vertical distance.

SOIL — Earth materials, including duff, humic materials, sand, rock, silt, clay and gravel.

STABILIZATION — The use, singly or in combination, of mechanical, structural, or vegetative methods to prevent or retard erosion.

STORMWATER — Stormwater runoff, snowmelt runoff, surface water runoff and drainage.

STORMWATER MANAGEMENT PERMIT — A permit issued by the Planning Board pursuant to this bylaw.

STORMWATER MANAGEMENT PLAN AND NARRATIVE — A document containing narrative, drawings and details prepared by a Massachusetts licensed qualified professional engineer (PE) which includes structural and nonstructural best management practices to manage and treat stormwater runoff generated from regulated development activity. A stormwater management plan also includes an operation and maintenance plan describing the maintenance requirements for structural best management practices.

STRIP — Any activity which removes the vegetative ground surface cover, including tree removal, clearing, grubbing, and storage or removal of topsoil.

TSS — Total suspended solids; material, including but not limited to trash, debris, soils, sediment and sand, suspended in stormwater runoff.

VERNAL POOLS — Temporary bodies of fresh water which provide critical habitats for a number of vertebrate and invertebrate wildlife species.

WATERCOURSE — A natural or man-made channel through which water flows, including a river, brook, or stream.

WETLAND RESOURCE AREA — Areas specified in the Massachusetts Wetlands Protection Act MGL c. 131, § 40 and regulations promulgated thereunder and in the Town of Andover Wetland Protection Bylaw and Regulations.¹

WETLANDS — Wet meadows, marshes, swamps, bogs, areas where groundwater, flowing or standing surface water or ice provides a significant part of the supporting substrate for a plant community for at least five months of the year; emergent and submergent communities in inland waters; that portion of any bank which touches any inland water.

§ 3. Authority.

This bylaw is adopted under authority granted by the Home Rule Amendment of the Massachusetts Constitution, the Home Rule statutes, and pursuant to the regulations of the federal Clean Water Act found at 40 CFR 122.34.

§ 4. Applicability.

- A. No person may undertake a construction activity that results in a land disturbance of 43,560 square feet or more without a stormwater management permit from the Planning Board.
 - (1) Land disturbances. Land disturbances of 43,560 square feet or more, including multiple separate activities which in aggregate disturb 43,560 square feet or more, whether on one parcel or adjacent parcels held in common ownership, shall require a stormwater management permit.
 - (2) Paving and impervious material. An increase of new pavement or other impervious material, reclamation of existing pavement, or a combination of both totaling 43,560 square feet or more shall require a stormwater management permit.
 - (3) The Town of Andover is not exempt from the provisions of this bylaw.
- B. Exempt activities. The following activities are exempt from the requirements of this bylaw:
 - (1) Normal maintenance and improvement of Town-owned publicways, appurtenances to the publicways, and private and public utilities.
 - (2) Normal maintenance and improvement of land in agricultural use.
 - (3) Repair of septic systems when required by the Board of Health or the Massachusetts Department of Environmental Protection for the protection of public health.

1. Editor's Note: See Art. XIV, Wetlands Protection By-Law.

- (4) Normal maintenance of currently existing landscaping, gardens or lawn areas associated with an existing use.
- (5) Overlaying of existing impervious surface.
- (6) Areas of land that have had a stormwater management review and approval either through the Conservation Commission or Planning Board using design criteria that at a minimum comply with the latest edition of the Massachusetts Stormwater Management Policy or with design criteria as described in Town of Andover's Subdivision Rules and Regulations² or with the Town of Andover Stormwater Management and Erosion Control Regulations, whichever is more stringent in the protection of the Town's resources.

§ 5. Administration.

- A. The Planning Board, as the permit granting authority, shall administer, implement, and enforce this bylaw. Any powers granted to or duties imposed upon the Planning Board in this bylaw may be delegated to designated agents upon a majority vote of the Planning Board. Should the Planning Board designate an agent, such agent shall be approved by the Town Manager.
- B. The Planning Board may adopt and periodically amend rules and regulations to effectuate the purposes of this bylaw. Failure by the Board to promulgate such rules and regulations shall not have the effect of suspending or invalidating this bylaw.
 - (1) Adoption of and revisions to regulations may only be made after conducting a public hearing to receive comments on any proposed revisions. Such hearing dates shall be advertised in a newspaper of general local circulation, at least 14 days before the hearing date.
- C. The Planning Board shall refer to the criteria and information, including specifications and standards, of the latest edition of the Massachusetts Stormwater Management Policy or to the design criteria as described in the Town of Andover's Subdivision Rules and Regulations³ or to the Town of Andover Stormwater Management and Erosion Control Regulations, whichever is more stringent in the protection of the Town's environmental and infrastructure resources, for execution of the provisions of this bylaw.
- D. The Planning Board may waive strict compliance with any requirement of this bylaw or the regulations promulgated hereunder, where:
 - (1) Such action is allowed by federal, state or local statutes and/or regulations; and

2. Editor's Note: See Art. XIII, Subdivision Rules and Regulations.

3. Editor's Note: See Art. XIII, Subdivision Rules and Regulations.

- (2) Is in the public interest; and
- (3) Is not inconsistent with the purpose and intent of this bylaw and its regulations.

§ 6. Permits and procedures.

Projects requiring a stormwater management permit shall be subject to the Town of Andover Stormwater Management and Erosion Control Regulations promulgated under Section 5 of this bylaw in addition to the procedures as set forth below.

A. Application.

- (1) An application package shall be filed with the Planning Board and other departments as specified in the regulations.
- (2) The Planning Board shall review the application for completeness and compliance with this bylaw and its regulations.

B. Public meetings.

- (1) The Planning Board shall hold a public meeting on all applications for stormwater management permits for the purpose of reviewing the application and accepting public input.
- (2) Notice of the public meeting shall be given by posting and by first-class mailings to abutters and abutters to abutters within 300 feet of the property line of the project site at least seven days prior to the meeting.
- (3) The Board shall make the application available for inspection by the public during business hours at the Planning Division.

C. Actions. The Planning Board may:

- (1) Approve the application and issue a permit if it finds that the proposed plan meets the objectives and requirements of this bylaw and its regulations;
- (2) Approve the application and issue a permit with conditions, modifications, or restrictions that the Board determines meet the objectives and requirements of this bylaw and its regulations;
- (3) Disapprove the application and deny a permit if the Planning Board finds that the applicant has submitted insufficient information to describe the site, the work, or the effect of the work on water quality and runoff volume; and
- (4) Disapprove the application and deny a permit if it finds that the proposed plan fails to meet the objectives and requirements of this bylaw or its regulations.

D. Time for action by the Board.

- (1) Within 45 days of the filing of an application for a stormwater management permit, the Planning Board or its designated agent shall:
 - i. Evaluate the application to ensure that it is complete prior to distribution;
 - ii. Distribute the complete application to boards and departments for technical review as specified in the regulations; and
 - iii. Arrange agenda time for a public meeting before the Planning Board.
- (2) Within 60 days of the filing of the application, an interdepartmental review shall be held.
 - i. Following the Interdepartmental review but prior to the Planning Board public meeting, the Town Engineer shall provide a written recommendation for action on the application. Such recommendation shall itemize all instances where the applicant has failed to meet the specifications and standards of the latest edition of the Massachusetts Stormwater Management Policy or of the design criteria as described in the Town of Andover's Subdivision Rules and Regulations⁴ or of the Town of Andover Stormwater Management and Erosion Control Regulations.
- (3) Within 90 days of the filing of an application for a stormwater management permit, the Planning Board shall hold a public meeting.
- (4) Once begun, the public meeting may not continue for more than 60 days unless such time is extended by written agreement between the applicant and the Board to a date certain announced at the meeting.
- (5) The Planning Board shall take final action within 21 days of the close of the public meeting discussion.

E. Failure to act.

- (1) Upon certification by the Town Clerk that the allowed time has passed without the Planning Board's action, failure to take such action shall be deemed to be approval of said application and a stormwater management permit shall be issued.

F. Appeals of action by the Planning Board.

- (1) A written decision of the Planning Board shall be final when it is executed by the Planning Board or its Chair or Acting Chair and filed in the Town Clerk's office. Further relief of a decision

4. Editor's Note: See Art. XIII, Subdivision Rules and Regulations.

by the Planning Board made under this bylaw shall be in the Superior Court or Land Court in accordance with the applicable law. The remedies listed in this bylaw are not exclusive of any other remedies available under any applicable federal, state or local law.

- (2) No work shall commence until the applicable appeal period has passed with no appeal or, if an appeal has been filed, the appeal has been finally resolved by adjudication or otherwise.

G. Permit duration.

- (1) All activity permitted by this bylaw must be completed within one year of permit issuance. Extensions of time can be granted by the Planning Board upon formal written request by the applicant. If one year passes without an extension being granted, the Board may revoke the permit.

H. Certificate of completion.

- (1) The Planning Board will issue a certificate of completion upon receipt and approval of final reports and documentation as specified in the regulations.

I. Public record.

- (1) The following documents shall be recorded at the Essex Registry of Deeds at the applicant's expense and proof of recording provided to the Planning Division:
 - i. The stormwater management permit.
 - ii. The approved operation and maintenance plan.
 - iii. The certificate of completion.

§ 7. Persons aggrieved.

Any person aggrieved by a decision or action of a designated agent appointed by the Planning Board under § 5A, including but not limited to matters regarding completeness of application, inspections, and compliance with technical design criteria, may, within 30 days of such decision or action, request a public meeting with the Planning Board. In such cases, following the decision of the Planning Board, the provisions of § 6F(1) shall apply.

§ 8. Consultants.

At the applicant's expense, the Planning Board may retain independent consultants as needed to advise the Board on any and all aspects of a specific project. Independent consultants may include but are not limited to registered professional engineers and environmental site monitors.

§ 9. Fees.

The Planning Board shall establish fees, subject to approval of the Board of Selectmen, to cover expenses connected with application review, mailings and monitoring permit compliance. The fees shall be sufficient to cover direct and indirect costs to the Town of processing and reviewing the application. Provided that a revolving fund for such purpose is established by the Town in accordance with the provisions of MGL c. 44, § 53E 1/2, the Planning Board is also authorized to collect fees from the applicant in amounts sufficient to pay a registered professional engineer and such other professional consultants as the Planning Board requires to advise the Planning Board on any and all aspects of the project. The fees for such professional engineers and consultants shall be paid to the Town for deposit into the revolving fund.

§ 10. Security.

Before the start of land disturbance activity, the Planning Board may require the permittee to post acceptable security, to insure that the work will be completed in accordance with the permit. The form of the security shall be approved by the Planning Board and shall be in an amount deemed sufficient by the Planning Board. If the project is phased, the Planning Board may release part of the security as each phase is completed in compliance with the permit but may not be fully released until the Planning Board has issued a certificate of completion.

§ 11. Enforcement.

- A. The Planning Board or its designated agent shall enforce this bylaw, its regulations, orders, violation notices, and enforcement orders and may pursue all civil and criminal remedies for such violations.
- B. Entry. The Planning Board or its agents shall have the authority, with prior approval from the property owner or pursuant to court process, to enter upon privately owned land for the purpose of performing their duties under this bylaw.
- C. Orders. The Planning Board or its designated agent may issue a written order to enforce the provisions of this bylaw or the regulations thereunder, which may include:
 - (1) A requirement to cease and desist from the land-disturbing activity until there is compliance with the bylaw or its regulations;
 - (2) Maintenance, installation or performance of additional erosion and sediment control measures;
 - (3) Monitoring, analyses, and reporting;
 - (4) Remediation of erosion and sedimentation resulting directly or indirectly from the land-disturbing activity;

- (5) Compliance with the operation and maintenance plan.
- D. If the enforcing person determines that abatement or remediation of erosion and sedimentation is required, the order shall set forth a deadline by which such abatement or remediation must be completed.
- E. Criminal penalty. Any person who violates any provision of this bylaw, regulation, order or permit issued thereunder, shall be punished by a fine in an amount of \$300. Each day or part thereunder that such violation occurs or continues shall constitute a separate offense.
- F. Noncriminal disposition. As an alternative to criminal prosecution or civil action, the Planning Board may elect to utilize the noncriminal disposition procedure set forth in MGL c. 40, § 21D, which has been adopted by the Town, in which case the Planning Board or designated agent shall be the enforcing person. The penalty for each violation shall be \$300 each day or part thereof that such violation occurs or continues shall constitute a separate offense.

§ 12. Severability.

If any provision, paragraph, sentence, or clause of this bylaw shall be held invalid for any reason, all other provisions shall continue in full force and effect.

Adopted02-10-09

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STORMWATER MANAGEMENT AND EROSION CONTROL REGULATIONS

I. PURPOSE

The United States Environmental Protection Agency has identified sedimentation and polluted stormwater runoff from land disturbance, land development and redevelopment activities as major sources of water pollution. To address the impact of these sources of water pollution, the Town of Andover has adopted a local Stormwater Management and Erosion Control Bylaw. The bylaw is necessary to protect the Town of Andover water bodies and groundwater resources, to safeguard the health, safety, and welfare of the general public and protect the natural resources of the Town.

Section 5.B of the Town of Andover Stormwater Management and Erosion Control Bylaw authorizes the Permit Granting Authority to adopt regulations to effectuate the purposes of this Bylaw. **The purpose of these regulations is to clearly set forth administrative procedures and design criteria necessary to achieve the objectives of the Town of Andover Stormwater Management and Erosion Control Bylaw:** to prevent or diminish the impacts of sedimentation and polluted stormwater from land disturbance, land development and redevelopment activities by controlling runoff and preventing soil erosion and sedimentation from site construction and development.

II. AUTHORITY

- A. The Regulations contained herein have been adopted by the Planning Board in accordance with the Town of Andover Stormwater Management and Erosion Control Bylaw, Section 5.B.
- B. Nothing in these Regulations is intended to replace or be in derogation of the requirements of the Town of Andover Wetlands Protection Bylaw or any Rules and Regulations adopted thereunder unless these Regulations are more stringent.
- C. These Stormwater Regulations may be periodically amended by the Planning Board in accordance with the procedures outlined in Section 5.0 of the Town of Andover Stormwater Management and Erosion Control Bylaw.

III. ADMINISTRATION

A. Permit Granting Authority

As the Permit Granting Authority, the Planning Board shall administer, implement and enforce these Regulations. Projects and activities approved by

the Planning Board shall be deemed in compliance with the intent and provisions of these Stormwater Management and Erosion Control Regulations.

As the Permit Granting Authority, the Planning Board may waive strict compliance of these regulations for applications including Low Impact Development if the design criteria of such waiver is allowed by federal, state or local statutes, is in the public interest and is not inconsistent with the purpose and intent of the Town of Andover Stormwater Management and Erosion Control Bylaw, Article XVI.

B. Designated Agents:

In accordance with Section 5.0 of the Town of Andover Stormwater Management and Erosion Control Bylaw, the Planning Board defines as “designated agents” and hereby delegates to such agents the administration, implementation, and enforcement of these Stormwater Management and Erosion Control Regulations as specified below.

1. Planning Division Staff

Under the supervision of the Director of Planning, the Planning Division Staff shall act as the designated agent in the administration, implementation, and enforcement of these regulations as follows:

- a. Receipt and review of applications for completeness
- b. Communications to applicants on the Planning Board’s behalf
- c. Distribution of applications and documentation to Town departments for review
- d. Procurement of Outside Consultants and Environmental Monitors
- e. Scheduling of public meetings and hearings
- f. Public notices
- g. Maintenance of all records and drawings associated with the Stormwater Management Permit.
- h. Review and granting of minor modifications to applications as described in Section IV. G of these Regulations.
- i. Recordation of permits and certificates at the Registry.
- j. Any other administrative task necessary for the orderly administration of these regulations not specifically assigned to a different designated agent.

2. Interdepartmental Review Committee

The Planning Board delegates to a committee of Town Staff which shall be known as the Interdepartmental Review Committee and shall include a representative from each of the Departments of Public Works, Conservation, Planning, Health, Public Safety and Building the responsibility for the technical review of applications, documentation, inspections and enforcement for compliance with these Regulations and the Stormwater Management Permit.

This committee may require additional information from the applicant or review by outside consultants and/or environmental site monitor when deemed necessary and as outlined in these Regulations and the Stormwater Management Permit.

Such representatives shall be selected by the Department Directors and approved by the Town Manager.

C. Persons Aggrieved

Any persons aggrieved by a decision or action of a designated agent appointed by the Planning Board under Section 5A of the Stormwater and Erosion Control Bylaw, including but not limited to matters regarding completeness of application, inspections, and compliance with technical design criteria may, within thirty (30) days of such decision or action, request a public meeting with the Planning Board. In such cases, following the decision of the Planning Board, the provisions of Section 6.F.1 of the bylaw shall apply.

IV. GENERAL PROCEDURES

Stormwater Management Permit issuance is required prior to any activity disturbing 43,560 square feet or more of land as listed in Section 4 of the Stormwater and Erosion Control Bylaw— (“Bylaw”), except as excluded in Section 4.B. of the Bylaw, or unless the Planning Board has determined that the provisions of this Bylaw should be waived for the particular activity pursuant to Section 5.D of the Bylaw . For the purposes of calculating the area of land disturbed or changes in impervious surfaces, the methodology set forth by EPA in the stormwater regulations applicable to the Town of Andover 40 CFR 122.26(b)(15)(i) will be followed. Specifically, a potential permittee shall apply for a permit if a single construction activity will disturb 43,560 square feet or more of land or will disturb less than 43,560 square feet but is part of a larger common plan or development or sale that would disturb 43,560 square feet or more. A larger common plan of develop or sale means a contiguous area where multiple separate and distinct construction activities are planned to occur at different times on different schedules under one plan, e.g., a housing development of five 1/4 acre lots. A single operator with multiple, but separate and distinct, construction activities not part of a larger common plan of development or sale, as defined in this paragraph, need not apply for a permit so long as each distinct construction activity disturbs less than 43,560 square feet of land.

The owner of the property or his Agent shall file for the permit in accordance with the procedures outlined below.

A. Application

An application shall be made to the Planning Board in the form and containing information as specified in these Regulations. Permit Applications shall be accompanied by payment of the appropriate fees. Fees, including those associated with postage for the mailing of notices to the project abutters shall

be received by the Planning Board prior to any review. Any application not accompanied by the appropriate fee shall be deemed incomplete.

B. Completeness of Application

The Planning Board or its designated agent shall make a determination as to the completeness of the application and adequacy of the materials submitted within 45 business days of submission. No review by the Interdepartmental Review Committee shall take place until the application has been found to be complete.

C. Information Requests

The Planning Board or its designated agent may request additional information as is necessary to enable the Planning Board to determine whether the proposed land disturbance activity will comply with the provisions of the Stormwater Management and Erosion Control Bylaw and Regulations.

D. Consent of property owner required for all applications

When the applicant does not own the property shown on a plan filed with an application pursuant to these Rules and Regulations, the applicant shall state the nature of his or her interest in the property and shall submit the written consent of the property owner by having the property owner appropriately sign the application for the Stormwater Permit as the applicant. An application shall not be considered complete unless the property owner has signed the application form. Where the owner is a partnership, trust or corporation, documents must be submitted indicating who has signing authority to enter into agreement on behalf of the partnership, trust or corporation. If the property owner subsequently withdraws consent to the application after the application is filed, the Board may deny the application for this lack of consent of the owner.

E. Employment of Outside Consultants

The Planning Board or its designated agent may require an independent Registered Professional Engineer, an Environmental Site Monitor, and/or other professional consultant to advise the Planning Board or its designated agents on any or all aspects of the project. All costs of said independent consultants shall be at the applicant's expense.

F. Modifications to an Application

The permittee, or the permittee's agent, must notify the Planning Board or its designated agent in writing of any change or alteration of a land-disturbing activity before the change or alteration occurs. Modifications resulting in grade changes under one (1) foot shall be considered minor and may be granted by the Planning Board's designated agent. If the Planning Board or its designated agent determines that the change or alteration is significant, based on the design criteria in these Regulations, the Planning Board may require that an amended application or a new application (including application fees unless

waived by the Planning Board) be filed. If any change or alteration from the Stormwater Management Permit occurs during land disturbing activities, including significant changes in schedule, the Planning Board or its designated agent may require the installation of interim erosion and sedimentation control measures before considering the change or alteration.

G. Access Permission

To the extent permitted by state law, and as authorized by the owner at the time of the application or other party in control of the property, the Planning Board, its Agents as specified in Section III.B. of these Regulations, officers, and employees may enter upon privately owned property for the purpose of performing their duties under the Bylaw and its regulations and may make or cause to be made such examinations, surveys or sampling as the Planning Board deems reasonably necessary to determine compliance with the permit.

H. Public Notification

The Planning Board will post notice of the public meeting and will be responsible for sending abutter notification based on the list obtained from the Town by the applicant and provided to the Planning Board. The applicant shall pay all costs associated with the notification requirements.

I. Exclusions from Permit Requirements

Projects that are defined as ““Exempt Activities” in Section 4.B of the Bylaw do not require approvals under these Regulations, nor shall the area of land disturbed in connection with such Exempt Activities be included in the calculation of the area of land disturbed by construction activities.

Activities exempted under Section 4.B(1) of the Bylaw shall include normal maintenance and improvement of publicly or privately-owned water and sewer lines, electrical and communications conduits, steam pipes, and gas pipelines.

V. PERMIT APPLICATION FILING REQUIREMENTS

A. Planning Board

The Stormwater Management Permit Application package to be submitted to the Planning Board shall include the following:

1. A completed Application Form with original signatures of all owners;
2. Twelve (12) copies of the Stormwater Management Plan and Narrative as specified in Section 6.0 of these regulations;
3. Twelve (12) copies of the Operation and Maintenance Plan as specified in Section 6.0 of these regulations,
4. Payment of the application and review fees.

B. Town Clerk

One (1) copy of the Application Form shall be filed with the Town Clerk by Planning Staff.

C. Other Boards or Commissions

Applicants shall submit an additional complete application to all Boards and/or Commissions which are currently reviewing other permits for the same project.

D. Notice requirements

The applicant shall provide a map indicating the Assessor's map and parcel as well as the address of the site to the Planning Department. A list of the names and mailing addresses of all abutting property owners as they appear in the most recent tax list(s) shall be obtained from the Assessor's Office by the Planning Department. This list shall not be more than six (6) months old. The list must include property owners on the opposite side of any street abutting the subdivision and abutters to abutting property owners within three hundred feet of the property under development consideration. If the site is within three hundred (300') of a municipal boundary, the applicant shall include a certified abutters list and corresponding tax map from the abutting municipality that includes all abutters within three hundred foot (300') from the site boundaries.

E. Review Fee Schedule

Fees shall be payable to the Town of Andover in the form of a money order, bank or certified check.

Professional review fees include engineering review, legal review, and clerical fees associated with the review and permit processing. When an independent consultant is required by the Planning Board, the consultant shall provide a fee estimate. The applicant may be required to deposit funds in a revolving account with the Town to cover these fees. The Planning Board may require additional fees if deemed necessary for proper review of an application or to ensure compliance.

An Applicant's failure to pay any additional review or inspection fee within five business days of receipt of the notice that further fees are required may be grounds for disapproval of the application.

VI. FORM AND CONTENTS OF THE PERMIT APPLICATION

The Stormwater Permit Application shall contain the following documents.

A. Complete Application for Stormwater Management Permit Form
See Appendix A.

B. Stormwater Management Plan and Narrative:

The Stormwater Management Plan and Narrative shall contain sufficient information for the Planning Board to evaluate the environmental impact, effectiveness, and compliance of the measures proposed by the applicant to these Regulations and the Massachusetts Department of Environmental Protection Stormwater Management Handbook. The information provided shall describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed best management practices for the permanent management and treatment of stormwater.

1. Stormwater Management Plan

The Stormwater Management Plan shall be prepared by a Massachusetts licensed professional engineer on a print of 24"x36" containing the following information:

a. General Project Information

(1) Plan Certification

(a) The plan(s) shall be sealed by (1) a professional engineer registered in Massachusetts in the field of civil engineering and (2) a registered land surveyor registered in Massachusetts. The engineer shall certify that the plan complies with all the rules and regulations of the Stormwater Management & Erosion Control Bylaw and the Stormwater Management & Erosion Control Rules and Regulations, except as noted. Failure to have these certifications shall result in denial of the application.

(2) Identification Information

(a) Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan.

(b) Title, date, north arrow, names of abutters, scale (1"=20' or 1"=40'), legend, and locus map (1"=800').

(c) Existing zoning designation.

(d) Existing and proposed land use of the site.

(e) A signature block to record the action of the Planning Board

(3) Notations Regarding Revisions-all revised plans shall contain a notation listing and describing all revisions, additions, and deletions made to the originally submitted plans and the date of each. Each revision shall be clearly shown on the plans and shall be identified by a triangle symbol with the corresponding revision number within the triangle.

b. Boundaries and Location Data

(1) Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, utilities and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed.

(2) Location, delineation and description of habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, Potential Vernal Pools, and Priority Habitats of Rare Species within five hundred (500) feet of any construction activity.

(3) The location of the one hundred year (100) flood boundary, as shown on the Flood Insurance Map (FIRM), in and within one hundred feet (100') of the lot;

(4) Location of all proposed wells, and septic systems in the project including all required setback dimensions to lot lines, wells and septic systems;

c. Streets, Impervious Areas and Site Improvements

(1) Lines of existing abutting streets showing drainage and driveway locations and curb cuts.

(2) Existing and proposed impervious surfaces, drainage structures and facilities, if applicable.

(3) Existing and proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable.

(4) Footprints of any structure on abutting properties with the names of the abutters, including properties on the opposite side of the street or way that abuts the site. Existing and proposed driveways shall also be shown.

d. Topography

(1) The location and elevation of one benchmark using NGVD Datum within 50 to 75 feet of the parcel which is not subject to dislocation or loss during construction

(2) Existing and proposed topography described in full contour detail, at two foot (2') intervals, with area of steep slope over 15%-25%, and over 25% delineated for pre-development and post-development with spot elevations provided when needed.

(3) Existing topography fifty feet (50') beyond the perimeter of the parcel as it appears on the most current Town of Andover topographic mapping shall be shown.

e. Drainage and Water

(1) Location, delineation and description of all existing and proposed watercourses, water bodies, and Wetland Resource Areas on or entering the site, or adjacent to the site, or into which stormwater flows, collects or percolates including the direction, flow rate, and volume of surface runoff under existing and proposed conditions. Information regarding their water quality and current water quality classification shall be included.

(2) Location, delineation and description of environmental and hydrological conditions, riparian zones and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a professional engineer for areas not assessed on these maps;

(3) A description and drawings of all components of the proposed drainage system including:

(a) locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization,

(b) all measures for the detention, retention or infiltration of water,

(c) all measures for the protection of water quality,

(d) the structural details for all components of the proposed drainage systems and stormwater management facilities,

(4) **notes on drawings specifying materials to be used, construction specifications, and typical details.** Drainage patterns, watersheds and subwatersheds, with calculations of proposed land disturbance within each subwatershed and areas of soil to be disturbed in each watershed throughout the duration of the proposed land disturbance activity

f. Soils

(1) Surface extent of each soil type as determined by the United States Department of Agriculture, Soils Conservation Service Soil Survey, with an accompanying analysis of the best use potential of the soils and the hydrological group classification

(2) An accurate field determination of seasonal high groundwater elevation in each area to be used for stormwater retention, detention, or infiltration with direction, rate of flow and seasonal fluctuations made by a Massachusetts Licensed Soil Evaluator or other Certified Professional such as a Geotechnical Engineer;

g. Landscaping

(1) The general outline of existing vegetation, wooded areas, significant trees, unique species and tree clusters;

(2) The extent of all vegetation, wooded areas, significant mature trees, unique species and/or tree clusters to be removed;

h. Site Disturbance and Erosion Control Measures

- (1) Limit of clearing and grading;
- (2) Locations and methods of all proposed erosion/sedimentation controls, showing key dimensions and other important details;
- (3) The location of proposed stockpiling area(s) for “earth” materials;
- (4) . Detailed drawings and types of both temporary and permanent erosion and sediment control structures;
- (5) The location of critical areas on the site (areas that have potential for serious erosion problems.)
- (6) Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable.
- (7) Location of temporary and permanent seeding, vegetative controls, and other temporary and final stabilization measures.

2. Stormwater Narrative

The Stormwater Narrative shall include the following information:

a. Scheduling and Construction Sequences

- (1) The timing, schedules, and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization.
- (2) A description of construction and waste materials expected to be stored on-site. The narrative shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response.
- (3) A description of provisions for phasing the project
- (4) A narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas.
- (5) A maintenance schedule for the period of construction.

b. Hydrological Conditions and Soils

- (1) Detailed description of the existing environmental and hydrological conditions of the site and of the receiving waters and Wetland Resource Areas.
- (2) A description of all surface watercourses, water bodies, and Wetland Resource Areas on or entering the site, or adjacent to the site, or into which stormwater flows. Information regarding their water quality and current water quality classification shall be included.
- (3) The runoff coefficient for each of the existing and proposed vegetation and ground surfaces.

(4) Existing soils (type, hydrologic group, erodibility) and the volume and nature of imported soil materials.

(5) Calculations of proposed land disturbance within each subwatershed and areas of soil to be disturbed in each watershed throughout the duration of the proposed land disturbance activity.

c. Drainage Systems

(1) A description of all components of the proposed drainage system including:

(a) locations, cross sections, and profiles of all brooks, streams, swales and

(b) their method of stabilization,

(c) all measures for the detention, retention or infiltration of water,

(d) all measures for the protection of water quality,

(e) the structural details for all components of the proposed systems stormwater management facilities,

(f) notes on drawings specifying materials to be used, construction specifications, and typicals, and

(g) expected hydrology with supporting calculations.

d. Erosion Control

(1) Description of and implementation schedule for temporary and permanent seeding, vegetative controls, and other temporary and final stabilization measures.

C. Operation and Maintenance Plan

An Operation and Maintenance Plan (O&M Plan) for the permanent storm water management system is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with these Regulations and the Massachusetts Surface Water Quality Standards contained in 314 CMR 4.00 in all seasons and throughout the life of the system.

Once approved by the Planning Board, the Operation and Maintenance Plan shall be recorded at the Essex North Registry of Deeds by the Planning Board or its agent at the expense of the current owner(s), shall remain on file with the Planning Board and shall be an ongoing requirement.

The Operation and Maintenance Plan shall conform to the requirements listed below.

1. Operation and Maintenance Plan Requirements.

An Operation and Maintenance Plan prepared by a Massachusetts licensed Professional Engineer shall include:

a. The name(s) of the owner(s) for all components of the system

b. Maintenance agreements that specify:

- (1) The names and addresses of the person(s) responsible for operation and maintenance
 - (2) The person(s) responsible for financing maintenance and emergency repairs.
 - (3) A Maintenance Schedule for all drainage structures, including swales and ponds.
 - (4) A list of easements with the purpose and location of each.
 - (5) The signature(s) of the property owner(s).
- c. Stormwater Management Easement(s)
- (1) Stormwater management easements to the Town are required for all areas used for off-site stormwater control associated with Town accepted public ways, unless a waiver is granted by the Planning Board.
 - (2) Easements shall be recorded with the Essex North Registry of Deeds prior to issuance of a Certificate of Completion.
 - (3) Stormwater management easements shall be provided and located by the property owner(s) as are necessary for:
 - (a) access for facility inspections and maintenance,
 - (b) preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event; and
 - (c) direct maintenance access by heavy equipment to structures requiring regular cleanout maintenance.

2. Changes to Operation and Maintenance Plans

- a. The owner(s) of the stormwater management system must notify the Planning Board or its Agent of changes in ownership or assignment of financial responsibility.
- b. The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of this Stormwater Management and Erosion Control Bylaw and Regulations by mutual agreement of the Planning Board and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility. Once the amended Plan is signed the Planning Board shall file it at the Registry of Deeds at the expense of the current owner(s).

3. Annual Report Submittal

The Responsible Parties must submit an annual report by September 1st to the Planning Board documenting the inspection and maintenance of the BMPs for which they are responsible. The reports must include:

- a. Descriptions of the condition of the BMPs,
- b. Descriptions of maintenance performed and,
- c. Receipts showing payment for maintenance performed.

VII. REVIEW AND APPROVAL PROCEDURE

A. Evaluation of Application for Completeness

Applications shall be reviewed for form and contents in accordance with Section VI. of these Regulations. The Planning Staff shall notify the applicant of any deficiencies in the application package within 14 days of receipt. Application packages with uncorrected deficiencies after 45 days of the filing date shall not be distributed for Interdepartmental Review. Instead a public meeting before the Planning Board shall be scheduled. The Planning Board may deny an application due to lack of completeness.

B. Distribution of Complete Application

Within forty-five (45) days of the filing of a complete application, the Planning Board or its designated agent shall distribute the application materials for technical review and schedule an Interdepartmental Review Committee meeting.

C. Application for Public Viewing

Application materials will be made available for viewing by the public inspection during normal business hours in the Planning Department.

D. Interdepartmental Review

1. Within sixty (60) days of the filing of a complete application, an Interdepartmental Review will be held in the Town Offices. The applicant and his representatives will be notified of the time and location of the Review.
2. The Interdepartmental Review of a Stormwater Permit application may be held concurrently with other interdepartmental review permitting procedures.
3. Upon completing the review and before the Planning Board public meeting, the Town Engineer shall provide a written recommendation to the Planning Board itemizing all instances where the applicant has failed to meet the specifications and standards of the latest edition of the Massachusetts Department of Environmental Protection Stormwater Management Handbook, or the Design Criteria as described in Andover's Subdivision Regulations if applicable, or of the requirements and criteria as set forth in these Regulations, whichever is more stringent.
 - a. In making its final decision, the Planning Board and its designated agents will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, slopes, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision.

4. In addition to the Interdepartmental Review, the Planning Board or its designated agent may require review of the application by an independent licensed professional at the applicant's expense. Such determination shall be made within forty-five (45) days of the filing of the application.

E. Public Meeting Notification

Within forty-five (45) days, the Planning Board or its designated agent will arrange agenda time for a meeting and prepare notifications. Such notice shall be made no later than seven (7) days prior to the public meeting and shall include a posting and first class mailings to abutters.

F. Public Meeting

Within ninety (90) days of the filing of the application, the Planning Board will hold a public meeting on the application where comments and questions from the public regarding the application will be addressed.

Once begun, the public meeting may not continue for more than sixty (60) days unless such time is extended by written agreement between the applicant and the applicant to a date certain announced at the meeting.

G. Planning Board Action

The Planning Board shall take final action within twenty-one (21) days of the public meeting discussion. Should the Planning Board fail to act within the allowed time, the application shall be deemed approved.

H. Digital Filing

Prior to the start of construction, the applicant shall provide CD-ROM or DVD-R media to the Planning Board containing a digital AutoCAD file of the plan including all information required in these Regulations. The digital data shall be delivered in the Massachusetts Coordinate System, North American Datum 1983 and North American Vertical Datum 1988, in U.S. Survey Feet. The file formats required are AutoCAD DWG (or ASCII DXF) version 2004 or earlier and Adobe PDF of each sheet in the application package. The digital file shall be reviewed by the Department of Public Works prior to the start of construction.

I. Surety

Before the start of construction, the Planning Board may require the permittee to post an acceptable surety to ensure that the work will be completed in accordance with the permit and these Regulations. The form of the surety shall be approved by Town Counsel and shall be in an amount deemed sufficient by the Planning Board.

J. Town Clerk Verification

Prior to the start of construction, the applicant must obtain written verification from the Town Clerk that no appeals of the Planning Board's decision are pending.

VIII. INSPECTIONS AND SITE SUPERVISION

A. Preconstruction Meeting

Prior to clearing, excavation, construction, or any land disturbing activity requiring a permit, the applicant, the applicant's technical representative, the general contractor, pertinent subcontractors, and any person with authority to make changes to the project, shall meet with the Planning Board's designated Agent and representative from the Interdepartmental Review to review the permitted plans and proposed implementation.

B. Site Inspections during Construction

1. Planning Board's Designated Agent Inspections

The Planning Board's designated agent shall make inspections as hereinafter required and/or shall review site inspection reports provided by an Environmental Site Monitor and shall either approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with the approved plans and any conditions of approval.

- a.** One copy of the permit plans and conditions of approval signed by the Planning Board shall be maintained at the site during the progress of the work.
- b.** A copy of the NPDES Construction General Permit and Stormwater Pollution Prevention Plan (if applicable) shall be kept on site as well.

2. Permittee Inspections.

During construction, the permittee or his/her Agent shall conduct and document inspections of all control measures no less than weekly or as specified in the permit, and prior to and following anticipated storm events. The purpose of such inspections will be to determine the overall effectiveness of the Erosion and Sedimentation Control Plan, and the need for maintenance or additional control measures.

- a.** As a condition of approval, the Planning Board may require an Environmental Site Monitor, approved by the Planning Board, be retained by the applicant to conduct such inspections and prepare and submit such reports to the Planning Board's designated Agent.
- b.** The permittee or his/her Agent shall submit monthly reports to the Planning Board's designated Agent in a format approved by the Planning Board.

(1) .

C. Final Inspection

1. After the stormwater management system has been constructed and before the surety has been released, the applicant must submit an as-built plan detailing the actual stormwater management system as installed.
2. The applicant must submit an explanation detailing any differences between the plans approved with the permit and the as-built plans. This explanation must be stamped by a Massachusetts licensed Professional Engineer.
3. The Planning Board's designated Agent shall inspect the system to confirm its "as-built" features. The designated Agent may require the Environmental Site Monitor to make such inspection and provide a report of its findings. This inspector shall also evaluate the effectiveness of the system in an actual storm. If the inspector finds the system to be adequate he shall so report to the Planning Board, at which time a Certificate of Completion will be issued.
4. If the system is found to be inadequate by virtue of physical evidence of operational failure, even though it was built as called for in the Stormwater Management Plan, it shall be corrected by the permittee to the satisfaction of the Planning Board before the performance guarantee is released.
5. If the permittee fails to act the Town of Andover may withhold the Certificate of Completion and pursue Enforcement as outlined in the Bylaw Section 11. Examples of inadequacy are: errors in the infiltrative capability, errors in the maximum groundwater elevation, failure to properly define or construct flow paths, or erosive discharges from basins.

D. Final Report

Upon completion of the work, the permittee shall submit a report (including certified as-built construction plans) from a Massachusetts licensed Professional Engineer (P.E.) and a Massachusetts licensed land surveyor, certifying that all erosion and sediment control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved permit. Any discrepancies should be noted in the cover letter.

E. Certificate of Completion

Prior to the issuance of the Certificate of Completion, digital files of the as-built conditions including all information and in the same formats as required in Section VII Paragraph H shall be submitted to the Planning Board.

The Planning Board will issue a letter certifying completion upon receipt and approval of the final reports and/or upon otherwise determining that all work of the permit has been satisfactorily completed in conformance with this Bylaw. The Certificate of Completion shall be recorded at the Registry of Deeds by the Planning Board at the Owner(s) expense.

IX. DESIGN CRITERIA

In addition to the following criteria, the applicant is to refer to the criteria, specifications and standards in the latest edition of the Massachusetts Department of Environmental Protection Stormwater Management Handbook and the Town of Andover's Subdivision Rules and Regulations and is to incorporate the most stringent criteria in the protection of the Town's environmental and infrastructure resources.

A. Stormwater Recharge

Impervious and disturbed surfaces from development alter the natural hydrologic cycle by discharging stormwater directly to streams, rather than allowing it to infiltrate through the soils and into groundwater as it did before development. This increases flooding and reduces the baseflow to streams that is needed in the summer months when there is little precipitation. The increased runoff from impervious surfaces also increases stream temperatures, since pavement and other impervious surfaces absorb substantial amounts of heat in the summer due to their dark coloring and lack of shade, which is transferred to runoff passing over the surface. The result is runoff that is dramatically warmer than natural groundwater inflow would have been under a natural hydrologic cycle. The purpose of this criteria is to maintain existing recharge rates to preserve existing groundwater levels and stream baseflows.

1. Recharge Calculation

The volume of water to be recharged shall be based on the site soils. The volume of water to be retained from the developed site shall be calculated using the following equation:

$Re_v = [(S)(R_v)(A)]/12$, where

Re_v = recharge volume (acre-feet)

$R_v = 0.05 + 0.009(I)$ where I is the percent impervious cover

A = site area in acres

S = Soil Specific Recharge Factor

Hydrologic Group	Soil Specific Recharge
A	0.60
B	0.35
C	0.25
D	0.10

2. Additional Recharge Criteria

The following criteria shall also apply:

- a. If more than one soil type is present at the site, a composite soil specific recharge factor shall be computed based on the proportion of total site area within each soil type. The recharge volume

provided at the site shall be directed to the most permeable soil available.

- b.** The recharge volume criteria does not apply to any portion of a site designated as a stormwater hotspot. Hotspots are defined as sites with higher potential pollutant loads, including:
- Stormwater discharges associated with Standard Industrial Classification (SIC)
 - Auto salvage yards (auto recycler facilities)
 - Auto fueling facilities (gas stations)
 - Fleet storage areas (cars, buses, trucks, public works)
 - Vehicle service and maintenance areas
 - Vehicle and equipment cleaning facilities
 - Commercial parking lots with average trip generation rates of 1,000 or greater per day, such as fast-food restaurants, convenience stores, high-turnover (chain) restaurants, shopping centers, and supermarkets
 - Road salt storage and loading areas (if exposed to rainfall)
 - Commercial nurseries
 - Flat metal (galvanized metal or copper) rooftops of industrial facilities
 - Outdoor storage and loading/unloading areas of hazardous substances
 - SARA 312 generators (if materials or containers are exposed to rainfall)
 - Marinas (service, repainting, and hull maintenance areas)
- c.** The Planning Board may alter or eliminate the recharge volume requirement if the site is situated on unsuitable soils (i.e., marine clays), karst or in an urban redevelopment area. In this situation, non-structural practices (filter strips that treat rooftop or parking lot runoff, sheet flow discharge to stream buffers, and grass channels that treat roadway runoff) should be implemented to the maximum extent practicable and the remaining or untreated volume included in the water quality volume.

3. Soil Group Classification

The soil group classification used to determine the CN value shall be based on an on-site percolation test and the table below:

Soil Group	A	B	C	D
Infiltration rate when wet (inches/hour)	> 0.3	0.15 – 0.3	0.05 – 0.15	0 – 0.05

B. Pretreatment

- 1.** Pre-treatment basins must be designed and located to be easily inspected and accessible to facilitate maintenance. Pre-treatment devices must also be sized to accommodate a minimum of one-year's worth of sediment and debris.
- 2.** The following standards shall be followed to ensure that the device will permit sufficient treatment to treat stormwater and allow for a reasonable required maintenance frequency for the Stormwater Treatment System (STS):
 - a.** Pre-treatment devices shall be provided for each STS; and
 - b.** Pre-treatment devices shall be designed to accommodate a minimum of one-year's worth of sediment; and
 - c.** Pre-treatment devices shall be designed to capture anticipated pollutants, such as oil and grease; and
 - d.** Pre-treatment devices shall be designed and located to be easily accessible to facilitate inspection and maintenance; and
 - e.** The Revised Universal Soil Loss Equation (RUSLE)¹ shall be used to calculate sediment deposits that would occur from pervious areas adjacent to the BMP; and
 - f.** Pretreatment structures shall be sized to hold an annual sediment loading. An annual sediment load shall be calculated using a sand application rate of 750 lbs/acre for sanding of roadways, parking areas and access drives within the subcatchment area, a sand density of 90 lbs per cubic foot and assuming a minimum frequency of ten sandings per year.

To obtain an annual sediment volume, perform the following calculation:

$$\frac{\text{Area to be sanded (acres)}}{\text{Acre-storm}} \times \frac{750 \text{ pounds}}{\text{ft}^3} \div \frac{90 \text{ pounds}}{\text{year}} \times 10 \text{ storms} = \frac{\text{cubic ft of sediment}}{\text{yr}}$$

¹ Developed by the Natural Resources Conservation Service, USDA to predict soil erosion due to water.

3. The permittee shall maintain any STSs used to trap sediment during construction to prevent sediment from leaving the site, and shall remove all sediment from all STSs when construction is finished and the site is stabilized.

C. Flooding Protection

The following standards shall be followed to control peak discharge rates and improve the overall effectiveness of the stormwater treatment systems. These are minimum design standards.

1. The post-development peak discharge rate shall be equal to or less than the pre-development peak discharge rate (based on a 2-year, 10-year, 25-year, and 100-year, 24-hour storm); and
2. The site shall be designed to ensure that all runoff from the site up to the 100 year storm enters the control structure. For example, the drainage system may only be sized to handle a ten-year storm, with larger storms flooding the distribution system and traveling overland. This overland flow, or overflow, must be directed into the peak control structure; and
3. The applicant shall account for all run-on and run-off (including off-site impacts) in both pre- and post-development conditions; and
4. The applicant shall prepare hydrographs for pre- and post-development conditions; and
5. Use Curve Numbers (CN) values as provided in Table 1 to calculate stormwater runoff rates for pre/post construction ground surface conditions; and
6. Any site that was wooded within the last five years must be considered undisturbed woods for all pre-construction runoff conditions, regardless of clearing or cutting activities that may have occurred on the site during that pre-application period; and
7. Use TR-55 to develop hydrographs and peak flow rates for the proposed development site. Make sure all areas are accounted for in the pre/post runoff calculations. The total tributary area that contributes flow from the proposed site, including runoff entering the site through piped drainage or surface runoff from off-site sources, must be included even if a portion does not contribute flow to the BMP. The objective is for the development's storm drain design to account for total runoff leaving the site; and

8. Off-site areas should be modeled as “present land use condition” in good hydrologic condition for the 2 and 10-year storm events for both pre and post development calculations; and
9. The length of overland sheet flow used in time of concentration (tc) calculations shall be limited to no more than 50 feet for pre- and post-development conditions.

Table 1
Approved CN Values for the SCS Methods (TR-20, TR-55)

	Hydrologic Soil Group			
Pre-Construction Runoff Curve Number (CN Values)	A	B	C	D
Open space such as lawns, parks, and cemeteries ²	68	79	86	89
Woods and forest ³	30	55	70	77
Impervious areas such as paved parking lots, driveways and roofs	98	98	98	98
Gravel roads (processed, dense graded)	76	85	89	91
Dirt roads	72	82	87	89
Newly graded pervious areas (no vegetation)	77	86	91	94
Post-Construction Runoff-Curve Number (CN Value)	A	B	C	D
Open space such as lawns, parks, and cemeteries ²	68	79	86	89
Woods and forest that is selectively cleared ³	43	65	76	82
Impervious areas such as paved parking lots, driveways and roofs	98	98	98	98
Gravel roads (processed, dense graded)	76	85	89	91
Dirt roads	72	82	87	89
Newly graded pervious areas (no	77	86	91	94

Source: TR-55, 1986

Notes:

1. The runoff curve numbers are for use in calculating runoff with TR-55 or other approved models.
2. The open space CN values for lawns, parks, and cemeteries assumes a “poor” condition for grass cover since the post-construction amount of grass cover cannot be predicted or guaranteed.
3. The pre-construction CN value for woods and forest is based on a “good” condition where the woods are undisturbed and brush adequately covers the soil. The post-construction CN value for woods and forest is based on a “fair” condition if any selective cutting is conducted since the soils typically become compacted due to the equipment used to remove the large white pines and there

may be post-cutting wind damage to the remaining unsupported canopy. If the applicant can demonstrate that no disturbance will occur during construction, then the pre-construction CN value for woods may be used for the post-construction runoff calculations. A note should be placed on the plan indicating where selective cutting will occur.

D. Channel Protection

The following method shall be used:

24 hours extended detention of the post-development 1-year, 24-hour return frequency storm event shall be provided.

E. Water Quality Volume

Stormwater treatment devices shall be used to handle water quantity as well as treat water quality. The water quality volume shall include the first flush of storms. The following method shall be used:

The water quality volume required to be treated shall be calculated as:

$$\text{Water Quality Volume (ft}^3\text{)} = \text{impervious surfaces (ft}^2\text{)} \times 0.5 \text{ (1/2 inch)} / 12 \text{ (inches per foot)}$$

F. Erosion Control

The following standards shall be met for erosion control, prior to any land disturbance activities commencing on the site:

1. Development shall be oriented to the site so that cutting and stripping of vegetation and grading are minimized;
2. Prior to any land disturbance activities commencing on the site, the developer shall physically mark limits of no land disturbance on the site with tape, signs, or orange construction fence, so that workers can see the areas to be protected.
3. Appropriate erosion and sediment control measures shall be installed prior to soil disturbance. Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area. Wetland areas and surface waters shall be protected from sediment.
4. Runoff shall be controlled and conveyed into storm drains and other outlets so it will not erode the land or cause off-site damage; sediment in runoff shall be trapped by using staked hay bales, silt fencing, or sedimentation traps, or other approved erosion control devices;
5. Sediment basins shall be constructed where necessary to detain runoff and to trap sediment during construction;

6. Sediment shall be removed once the volume reaches $\frac{1}{4}$ to $\frac{1}{2}$ the height of the silt fence or hay bale.
7. Offsite runoff shall be diverted from highly erodible soils and steep slopes to stable areas.
8. Erosion and sediment controls shall be coordinated with the sequence of grading, development and construction operations; control measures shall be in effect prior to commencement of each increment/phase of the process;
9. Land disturbance activities exceeding two acres in size shall not be disturbed without a sequencing plan that requires stormwater controls to be installed and the soil stabilized, as disturbance beyond the two acres continues. Mass clearings and grading of the entire site should be avoided. Prior to any construction on the site, applicant shall submit a construction phasing plan to the Planning Department for review and approval.
10. Soil and other materials shall not be stockpiled or redistributed, either temporarily or permanently, in locations or in such a manner as would cause suffocation of tree root systems;
11. Topsoil shall be stripped from disturbed areas, stockpiled in approved areas and stabilized with temporary vegetative cover if it is to be left for more than thirty (30) calendar days; perimeter sediment controls shall be installed around each area of stockpiled topsoil.
12. Soil stockpiles shall be stabilized or covered at the end of each workday.
13. The area of disturbance shall be kept to a minimum. Disturbed areas remaining idle for more than 14 days shall be stabilized.
14. Grading shall be kept to a minimum; tree removal shall be minimized;
15. For active construction areas such as borrow or stockpile areas, roadway improvements and areas within 50 feet of a building under construction, a perimeter sediment control system shall be installed and maintained to contain soil.
16. A tracking pad shall be constructed at all entrance/exit points of the site to reduce the amount of soil carried onto roadways and off the site.
17. Dust shall be controlled at the site.

18. On the cut side of roads, ditches shall be stabilized immediately with rock rip-rap or other non-erodible liners, or where appropriate, vegetative measures such as sod.
19. All graded areas beyond the Street Right-of-Way shall be covered with four (4") inches of topsoil and planted with a native specie of vegetative cover, sufficient to prevent erosion;
20. Temporary seeding, mulching or other suitable stabilization methods shall be used to protect exposed soil areas during construction; as feasible, natural vegetation shall be retained and protected; during the months of October through March, when seeding may be impractical, an anchored mulch or sod shall be applied as approved by the Planning Board or by its Designee; diversions and/or prepared outlets may be required in critical areas during construction.
21. Permanent seeding should be undertaken in the spring from March through May, and in late summer and early fall from August to October 15. During the peak summer months and in the fall after October 15, when seeding is found to be impractical, an appropriate temporary mulch shall be applied. Permanent seeding may be undertaken during the summer if plans provide for adequate mulching and watering.
22. Permanent vegetation and erosion control structures, as necessary, shall be installed preferably immediately after construction is completed but otherwise no later than the first full spring season immediately thereafter; they shall comply with the erosion and sedimentation vegetative practices recommended by the U.S. Soil Conservation Service;
23. Temporary ground cover or erosion/sedimentation controls shall be established on any unbuilt lots as required by the Planning Board;
24. Native species shall be used for re-vegetation;
25. All slopes steeper than 3:1 (h:v, 33.3%), as well as perimeter dikes, sediment basins or traps, and embankments shall, upon completion, be immediately stabilized with sod, seed and anchored straw mulch, or other approved stabilization measures. Areas outside of the perimeter sediment control system shall not be disturbed.
26. Monitoring and maintenance of erosion and sediment control measures throughout the course of construction shall be required. The applicant shall submit to the Planning Board, a complete Operation and Maintenance Plan for temporary and permanent erosion control measures, as part of the application package.

27. Temporary sediment trapping devices shall not be removed until permanent stabilization is established in all contributory drainage areas. Similarly, stabilization shall be established prior to converting sediment traps/basins into permanent (post-construction) stormwater management facilities. All facilities used as temporary measures shall be cleaned prior to being put into final operation.
28. All temporary erosion and sediment control measures shall be removed after final site stabilization. Disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 days. The applicant's engineer shall submit written certification that this condition has been met.

G. Engineering Criteria

Dentention, Retention and Infiltration basins shall meet the following requirements:

1. The forebay/sediment trap shall be at least 10 feet long and sized to hold at least the annual sediment loading.
2. Maintenance access shall be planted with grass and at least 10 feet wide with a maximum slope of 15% and a maximum cross slope of 3%.
3. A means to prevent soil compaction on the floor of the basin during construction shall be provided.
4. The treatment storage area shall be sized to hold 1 inch times the impervious area; OR the 1-year, 24-hour storm.
5. The perimeter of all basins shall be curvilinear so that from most edges of the basin, the whole basin will not be in view. A more traditionally shaped (oval or rectangular) basin may be permitted when conditions such as topography, parcel size, or other site conditions warrant. Basins shall follow natural landforms to the greatest extent possible or be shaped to mimic a naturally formed depression.
6. Place inlets and outlets to maximize the flow path through the facility. At a minimum, the flow path shall be twice as long as wide. Baffles, pond shaping or islands can be added within the permanent pool to increase the flow path. If there are multiple inlets, the length-to-width ratio shall be based on the average flow path length for all inlets.
7. Minimum 1 foot of freeboard above the 25-year storm elevation.

8. The interior slopes of the basin within the pool area shall not exceed a slope of three horizontal to one vertical.
9. A minimum of six inches (6") of topsoil shall be provided for all planting ground cover beds or lawn areas.
10. Low flow outlets shall be designed to prevent clogging.
11. For basins that cannot infiltrate the water quality volume, use a soil filter conforming to the following:
 - a. Impoundment Depth – Peak storage depth within the filter area for water quality volume may not exceed eighteen inches (18').
 - b. Pipe layout and spacing – Layout of the pipe underdrain system must be sufficient to effectively drain the entire filter area. There must be at least one line of underdrain pipe for every eight feet (8') of the filter area's width. The slope of the pipe must be 1% or greater.
 - c. Pipe bedding – Minimum twelve inches (12") over top of drainage pipe, six inches (6") thick at sides, and 6 inches below drainage pipe of clean well-graded gravel.
 - d. Filter bed – The soil must consist of loamy, coarse sand. The soil filter must extend across the bottom of the entire filter area. The soil must be at least eighteen inches (18") deep and underlain by a 3" thick filter layer of pea gravel and a gravel pipe bedding.
 - e. Surface Cover – The top of the underdrain system must be covered with a four inch (4") layer of sandy loam and then covered with plantings consisting of species tolerant of frequent inundation.
 - f. Underdrain outlet – Each system must discharge to an area capable of withstanding concentrated flows and saturated conditions without eroding.
 - g. Groundwater Setback- Within a Watershed or Groundwater Protection Area, or within 100' of private drinking water wells, there should be a 2' separation between the bottom of the basin and the seasonal high groundwater elevation.

H. Hydrologic and Hydraulic Criteria for All Designs

1. Impervious cover shall be measured from the site plan and shall include any material or structure on or above the ground that prevents water from infiltrating through the underlying soil. Impervious surface is defined to include, without limitation: paved parking lots, sidewalks, roof tops, driveways, patios, and paved roads.
2. Determination of flooding and channel erosion impacts to receiving streams due to land development projects shall be measured at each point of discharge from the development project and such determination shall include any runoff from the balance of the watershed which also contributes to that point of discharge.
3. The specified design storms shall be defined as a 24-hour storm using the rainfall distribution recommended by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).
4. Proposed residential, commercial, or industrial subdivisions shall apply these stormwater management criteria to the land development as a whole. Individual lots in new subdivisions shall not be considered separate land development projects, but rather the entire subdivision shall be considered a single land development project. Hydrologic parameters shall reflect the ultimate land development and shall be used in all engineering calculations.

Andover Planning Board

Application For Stormwater Management Permit

(Article XVI of the Andover Code of By-laws)

GENERAL INSTRUCTIONS

An applicant for a Stormwater Management Permit must file with the Planning Board a completed application package, in accordance with the requirements of the Stormwater Management and Erosion Control Bylaw and Regulations. Timelines concerning the review process will not begin until the Planning Board has determined that the application is complete and decisions from other Boards and Commissions have been concluded.

1. Any application not accompanied by the appropriate fee shall be deemed incomplete. Payment must be made to the Town of Andover money order, bank or certified check payable to the Town of Andover.
2. An Applicant's failure to pay any additional review or inspection fee within five business days of receipt of the notice that further fees are required shall be grounds for disapproval.
3. The Planning Board will publish the public notice. The Planning Board is responsible for sending abutter notification.. The applicant shall pay all costs associated with the publication and notification requirements.

Professional review fees include engineering review, legal review, and clerical fees associated with the public review and permit processing. A fee estimate may be provided by the Planning Board's consultant. The applicant may be required to establish an escrow account with the Town to cover the review fees. If the escrow account becomes depleted, the applicant will be required to renew the escrow account in order to continue the review of the application.

Applicant's Name _____

Applicant's Address _____

Applicant's Phone _____

Owners' Names(s) _____

Owners' Address _____

Owner's Phone _____

The Stormwater Management Permit involves property where owner's title to the land is derived under deed from _____, dated _____, and recorded in the Essex North Registry of Deeds, Book _____, Page _____, or Land Court Certificate of Title No _____, Registered in _____ District, Book _____, Page _____.

The project is located on the parcel shown on Assessors Map _____, Parcel _____.

Project street address _____

Give a brief summary of the nature of the project:

The property (building) is described as being located at _____;

It is currently used as _____,

The changes proposed are _____

Planned start date: _____, Planned completion date: _____

Total area to be disturbed? _____ square feet

Total area of the site (lot) _____ square feet

Zoning District _____

Will there be disturbance of any slope greater than 25-35%? _____ Yes _____ No

If yes, give the area of the slope disturbance. _____ square feet

Please list other narratives and plans (graphics) submitted with this application.

1. _____

2. _____

3. _____

4. _____

5. _____

6.. _____

Attach application fee and supporting documents.

Certification

I, the undersigned, hereby certify that I have read and understand the requirements and conditions of the Town of Andover Stormwater Management and Erosion Control Bylaw and Regulations and that the information included in the application materials is accurate and truthful to the best of my knowledge. (sign and print name and date)

Owner Signature: _____ Date: _____

Name _____
(please print)

Applicant Signature: _____ Date: _____

Name: _____
(please print)

(Office use only)

SMP # _____

Appendix E

Inventory of Town-Owned Property

Appendix F

SWPPP Facilities

Appendix G

Catch Basin Optimization Plan

Plan for Optimizing Catch Basin Cleaning

Andover, MA

June 30, 2019



Prepared For:

Town of Andover
36 Bartlet St
Andover, MA 01810

Prepared by:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740



Table of Contents

Plan for Optimizing Catch Basin Cleaning – Andover, MA

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4.2	Catch Basin Cleaning Standard Operation Procedure (SOP).....	2
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List of Appendices

Appendix A. Map of Drainage Infrastructure

Appendix B. Standard Operating Procedures for Catch Basin Cleaning and Inspection

1 Introduction

This Catch Basin Cleaning Optimization Plan has been prepared by Andover, MA to address the catch basin inspection, cleaning and maintenance requirements of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 MS4 Permit."

The 2016 MS4 Permit requires the permittee to document its plan for optimizing catch basin cleaning, inspections, or its schedule for gathering information to develop the optimization plan. This plan documents the Town's existing catch basin cleaning program and its plans for gathering additional information to refine its program to meet the requirements of the permit.

2 Permit Requirements

This Catch Basin Cleaning Optimization Plan addresses Section 2.3.7.1.a.iii.2 of the 2016 MS4 Permit (Infrastructure Operations and Maintenance), which includes the following requirements:

- **Establish a schedule** with the goal that the frequency of routine cleaning will ensure that no catch basin at any time will be more than 50 percent full¹;
- **Prioritize** inspection and maintenance for catch basins:
 - located near construction activities². These should be cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings;
 - discharging to impaired waters where the pollutant of concern is E. coli or enterococcus; and
 - with sumps more than 50% full during consecutive inspections.
- **Establish proper documentation** of catch basin inspections to include:
 - the location and total number of catch basins;
 - the location and total number of catch basins cleaned or inspected; and
 - the total volume or mass of material removed from catch basins.
- **Develop an optimization plan** for catch basin cleaning, inspection plans, or a schedule for gathering information to develop the optimization plan in the first annual report and in the SWMP.

¹ A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.

² Roadway construction; residential, commercial, or industrial development or redevelopment.

3 Existing Catch Basin Management Program

The Town has 4,755 town-owned catch basins to clean and maintain. Refer to the map in **Appendix A**. Given the large number of basins and expense of cleaning, catch basins are cleaned approximately every other year, with a select number of “priority” basins inspected and cleaned more frequently.

4 Plans to Refine Catch Basin Cleaning Optimization

4.1 Optimization Methodology

Andover will continue to implement its existing catch basin cleaning schedule including more frequent cleaning of catch basins with known higher sediment loads. During this time, it will collect data on the sump depth and sediment depth in each catch basin. A spreadsheet will be used to track sediment depth at each location. The catch basin inspection form included with the standard operating procedure (SOP) in **Appendix B** will be used to document data collected during cleaning.

A minimum of two years of data will be collected and evaluated to determine the status of the catch basins and whether the sump was more than half full. The catch basins that are more than 50% full will be evaluated for potential factors that may have contributed to it being 50% full (i.e., smaller sump, nearby construction, surrounding land uses, location in town). The evaluation will be used to identify catch basins that require more frequent inspection and/or cleaning and to develop an optimization plan that prioritizes these structures accordingly.

4.2 Catch Basin Cleaning Standard Operation Procedure (SOP)

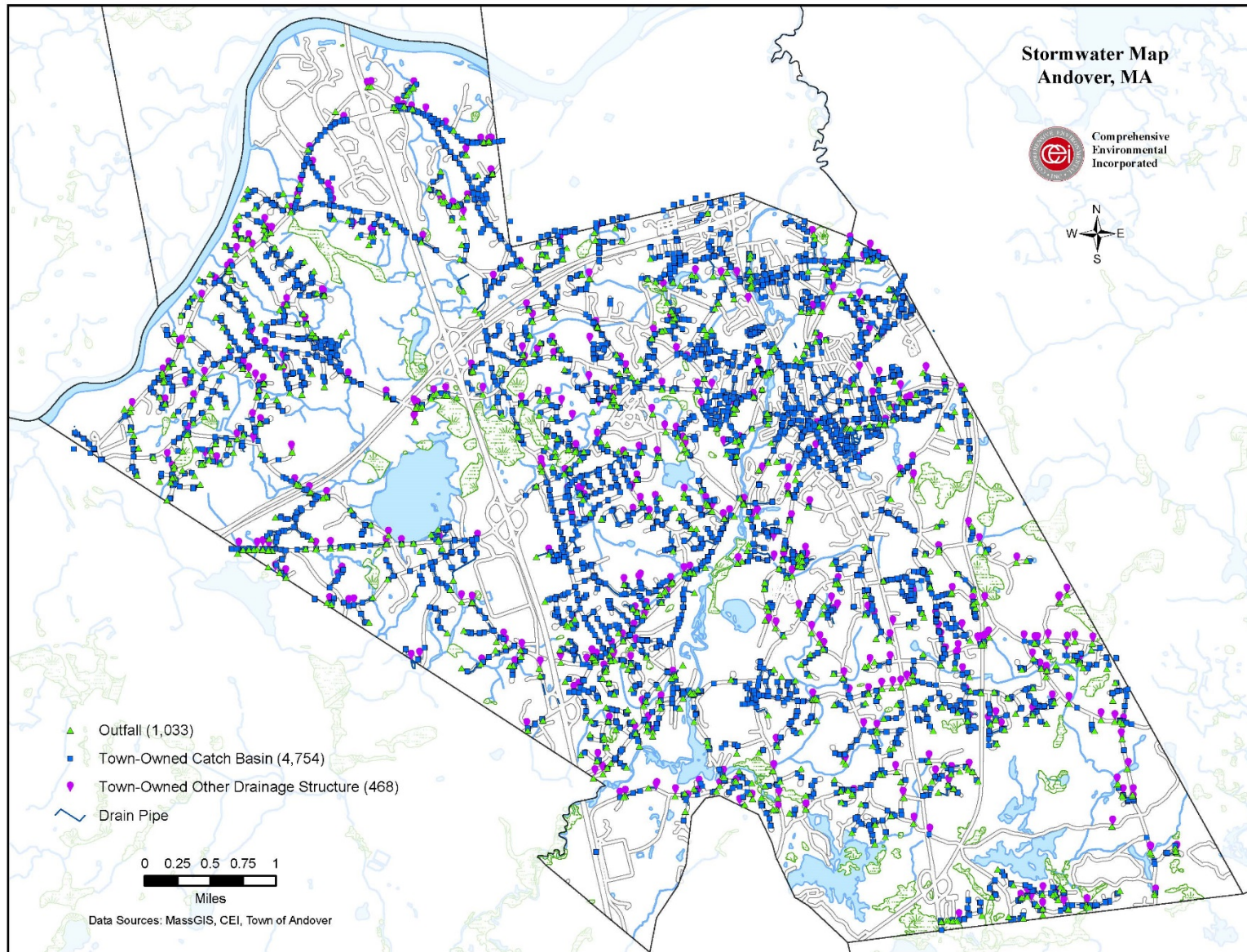
All catch basins will be inspected and cleaned following the standard operating procedures (SOP) provided in **Appendix B**.

4.3 Catch Basin Cleanings Storage and Disposal

Andover will explore possible beneficial uses for its collected catch basin cleanings.

Appendix A

Map of Drainage Infrastructure



08.30.2019

Appendix B

Standard Operating Procedures for Catch Basin Cleaning and Inspection

Permit Requirements

As required by the 2016 MS4 Permit, catch basin inspection and cleaning requirements include the following:

- **Inspect and clean catch basins** to ensure that no catch basin is not more than 50 percent full;
- **Prioritize inspection and maintenance** for catch basins:
 - located near construction activities;
 - discharging to impaired waters; and
 - with sumps more than 50% full during consecutive inspections.
- **Establish proper documentation** of catch basin inspections; and
- **Develop an optimization plan** for catch basin cleaning and inspection.

Before Cleaning and/or Inspection

- **Notify residents and business** of catch basin cleaning schedule to restrict parking that could obstruct catch basin cleaning operations.
- **Gather** all required forms and maps.
 - Catch Basin Inspection Form; and
 - Maps of area to be cleaned/inspected

Cleaning and Inspection during Cleaning

1. Clean sediment and trash off of grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
 - **Before cleaning:**
 - Do a visual inspection of outside of grate.
 - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
 - Measure depth from rim of catch basin to top of sediment.
 - Measure depth from rim of catch basin to the top of the outlet pipe.
 - Take photo of catch basin.
 - **Clean catch basin:**
 - For manual removal, place removed material in a location protected from potential runoff and place cleanings in a vehicle for transport to designated disposal area.
 - OR use a high-powered vac truck to remove sediment.
 - **After cleaning:**

- Measure depth from rim to bottom of catch basin.
 - Measure depth of sump (outlet pipe to bottom of catch basin).
 - Note if the catch basin is more than 50% full with sediment.
 - Note if the catch basin requires maintenance or if there are pollutants present.
 - Take photo of catch basin.
4. **Storage:** Bring cleanings to designated location for storage and disposal.
 5. If any illicit discharges are observed or suspected, notify supervisor.

Interim Inspection between Cleaning Cycles

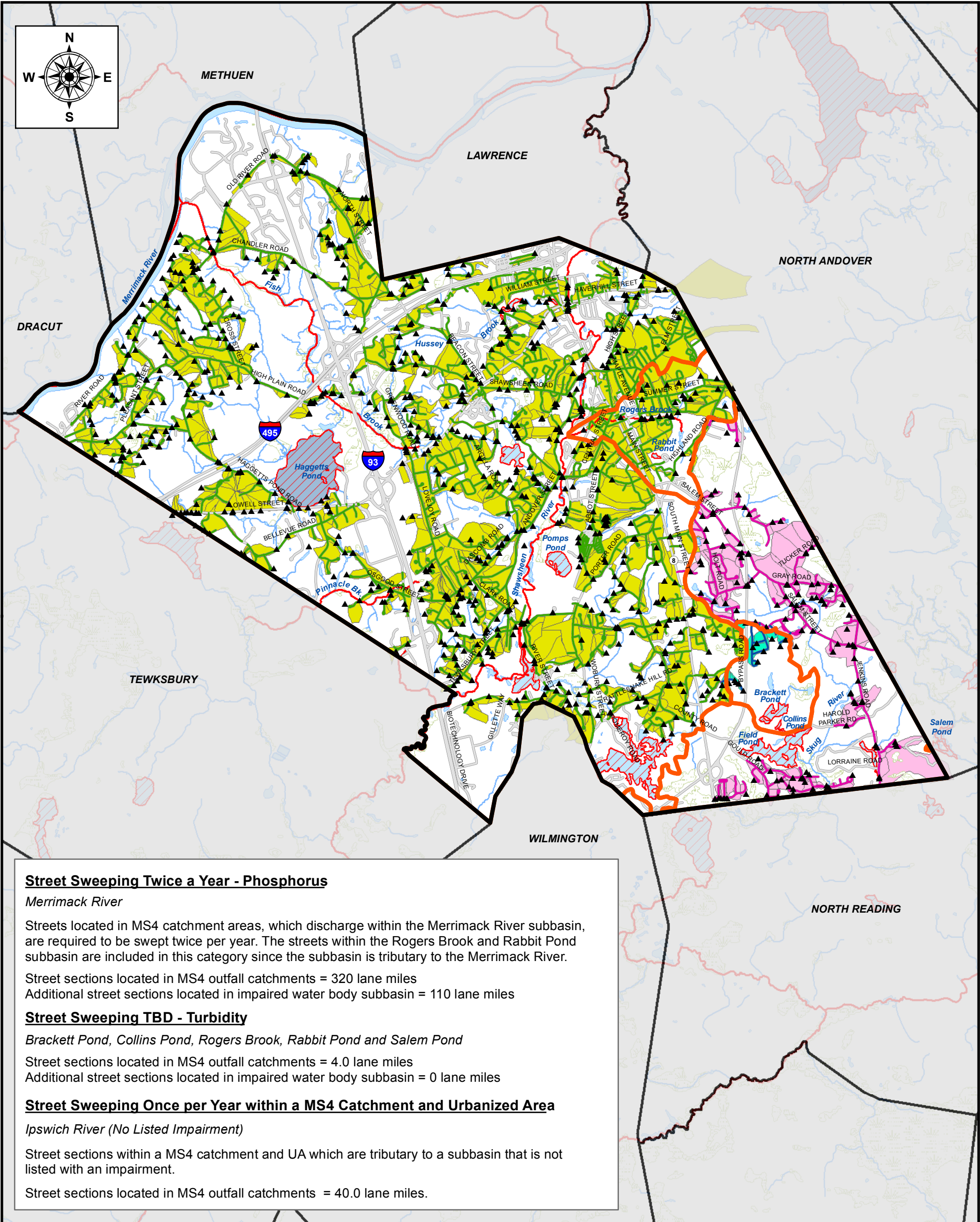
1. Clean sediment and trash off grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
 - Do a visual inspection of outside of grate.
 - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
 - Measure depth from rim of catch basin to top of sediment.
 - Using sump depth collected during previous cleaning, note if the catch basin is more than 50% full with sediment.
 - Note if the catch basin requires maintenance or if there are pollutants present.
4. If any illicit discharges are observed or suspected, notify supervisor.

Catch Basin Inspection Form

Inspection Information									
Catch Basin ID									
Street Location				GPS Location					
Inspector's Name									
Date of Inspection				Time of Inspection					
Weather (circle)		Dry		Light Rain		Heavy Rain		Snow	
Catch Basin Information									
Location		Surface Type				Grate			
<input type="checkbox"/> Road/Curb <input type="checkbox"/> Alley <input type="checkbox"/> Ditch <input type="checkbox"/> Parking Lot <input type="checkbox"/> Driveway <input type="checkbox"/> Sidewalk Other: _____		<input type="checkbox"/> Asphalt <input type="checkbox"/> Gravel <input type="checkbox"/> Concrete <input type="checkbox"/> Grass/Dirt Other: _____				____ inches x ____ inches Material: _____ Shape: _____			
Catch Basin Condition									
CB Damage: No Yes		Comment: _____							
	<u>Materials (circle)</u>					<u>Condition (circle)</u>			
Grate	Cast Iron Brick Concrete Aluminum Fiberglass					Poor Fair Good Excellent			
Frame	Cast Iron Brick Concrete Aluminum Fiberglass					Poor Fair Good Excellent			
Chimney	Cast Iron Brick Concrete Aluminum Fiberglass					Poor Fair Good Excellent			
Walls	Cast Iron Brick Concrete Aluminum Fiberglass					Poor Fair Good Excellent			
Trap/Hood	Cast Iron Brick Concrete Aluminum Fiberglass					Poor Fair Good Excellent			
Sump	Cast Iron Brick Concrete Aluminum Fiberglass					Poor Fair Good Excellent			
Sediment Depth and IDDE (inches)									
A. Depth from Rim to Top of Sediment: _____ B. Depth from Rim to Bottom of Basin (after vac): _____ C. Sump Depth: _____ D. Depth of Sediment (B-A): _____ E. More than 50% Full of Sediment? (D/C): _____ CB Cleaned? No Yes Suspected illicit discharge? No Yes						Check those Present: __ Sanitary Waste/Smell __ Excessive Sediment __ Oil Sheen __ Floatables/Trash __ Pet Waste: Other: _____ Potential Source: _____			

Appendix H

Street Sweeping Optimization Plan



Street Sweeping Twice a Year - Phosphorus

Merrimack River

Streets located in MS4 catchment areas, which discharge within the Merrimack River subbasin, are required to be swept twice per year. The streets within the Rogers Brook and Rabbit Pond subbasin are included in this category since the subbasin is tributary to the Merrimack River.

Street sections located in MS4 outfall catchments = 320 lane miles
Additional street sections located in impaired water body subbasin = 110 lane miles

Street Sweeping TBD - Turbidity

Brackett Pond, Collins Pond, Rogers Brook, Rabbit Pond and Salem Pond

Street sections located in MS4 outfall catchments = 4.0 lane miles
Additional street sections located in impaired water body subbasin = 0 lane miles

Street Sweeping Once per Year within a MS4 Catchment and Urbanized Area

Ipswich River (No Listed Impairment)

Street sections within a MS4 catchment and UA which are tributary to a subbasin that is not listed with an impairment.

Street sections located in MS4 outfall catchments = 40.0 lane miles.

Legend

- ▲ MS4 Outfall

303d Water Bodies

 - Impaired Lake, Pond
 - Impaired River, Stream

Hydrography

 - Lake, Pond, River
 - Reservoir
 - Wetlands
 - Stream, Brook
- Subbasin Boundary

MS4 Outfall Catchments

 - Sweep Twice per Year - Phosphorus
 - Sweep Once per Year - No Listed Impairment
 - Sweep TBD - Turbidity

Streets within Outfall Catchments

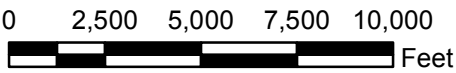
 - Sweep Twice per Year (Phosphorus)
 - Sweep Once per Year (No Listed Impairment)
 - Sweep TBD (Turbidity)

Street Sweeping Map

Sweeping per Phase II Requirements

Andover, Massachusetts

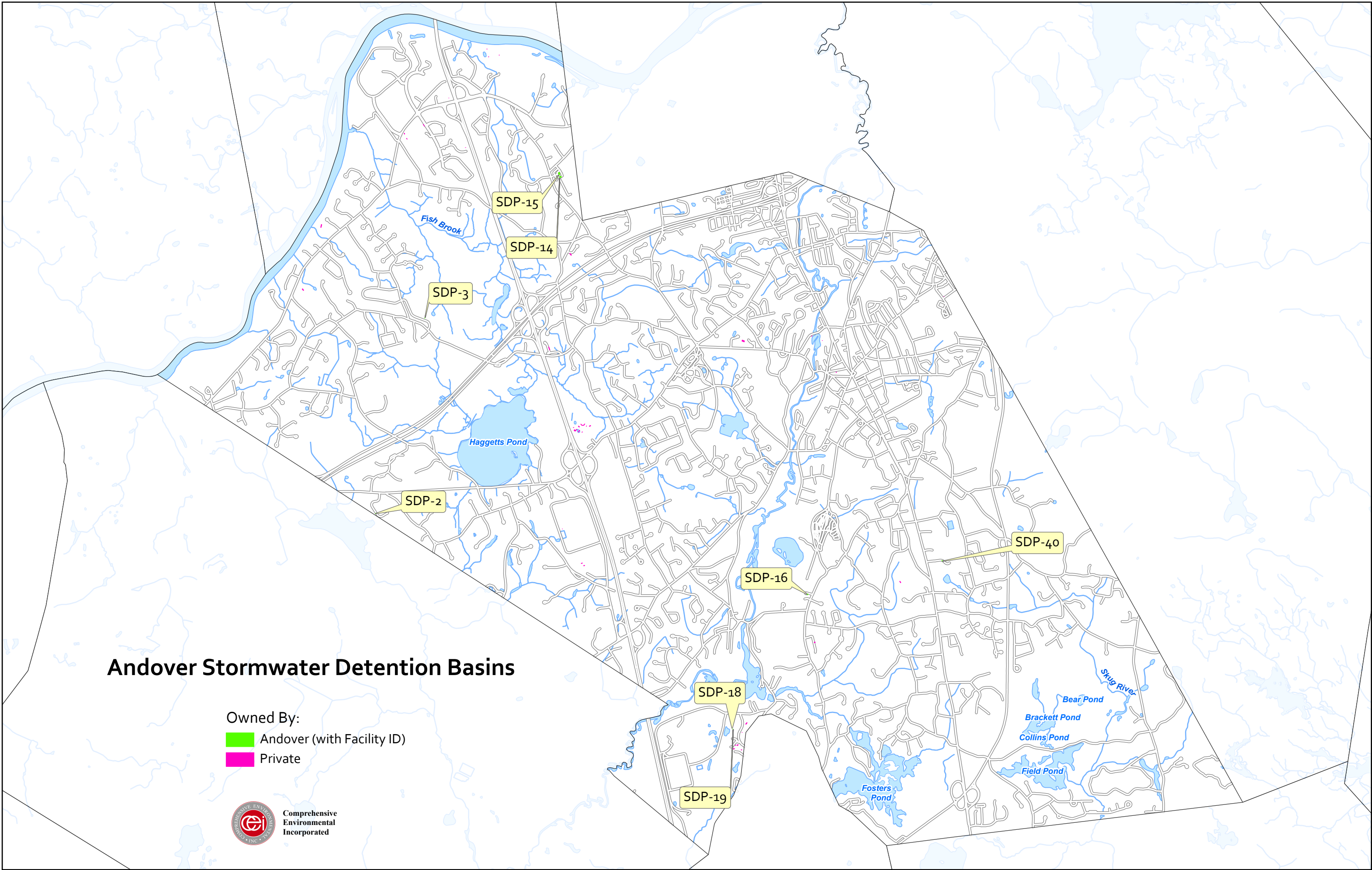
Note: The Town of Andover is entirely within an Urbanized Area (UA) boundary



Comprehensive Environmental Inc.

Appendix I

List of Stormwater BMPs



Andover Stormwater Detention Basins

Owned By:

- Andover (with Facility ID)
- Private



Comprehensive
Environmental
Incorporated

Town-owned BMPs

Facility ID	BMP Type	Location Description
SDP-2		Jordyn Lane
SDP-3	Drywell	West Andover Schools
SDP-14		Northfield Commons
SDP-15		Northfield Commons
SDP-16		Winterberry Lane
SDP-18		
SDP-19		
SDP-40	Subsurface Detention Area	West Knoll Rd

Appendix J

Annual Reports